Monitoring Adjustment and Poverty in Bangladesh-Phase III

Project Completion Report

Research Division, CIRDAP

March 2001

Centre on Integrated Rural Development for Asia and the Pacific

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1. Introduction

The International Development Research Centre (IDRC) and the Canadian International Development Agency (CIDA) has approved at the initial stage an amount of $1,122,800 CAD which later revised to $1,183,060 CAD to the Centre on Integrated Rural Development for Asia and the Pacific (CIRDAP) to undertake the research project entitled "Monitoring Adjustment and Poverty (MAP) –III. The three years project was initiated in 1995 and expected to be completed in 1998. Due to some unavoidable circumstances, the project had to be extended until March 2001. Out of the fund granted for the project, it could only utilise 95.70 per cent of the total fund. The details of the expenditure is given at Annex-I. This report is prepared as an integral part of the project agreement and to be considered as project ending report comprising of the work accomplished under the project as well as the summary of findings, project results and appropriate policy recommendations.

1.1 Objectives

The major objectives of the Phase-III of the project were: to strengthen the capabilities of national institutions to establish and undertake, a system of regular data collection based on multidimensional indicators for monitoring poverty and analyse the impact of major macroeconomic and structural adjustment policies on poverty at the household level which would provide feedback to planners and policy makers.

1.2 Specific Objectives

- Provide technical, manpower, training and other logistics support to the Bangladesh Bureau of Statistics (BBS) to develop its in-house capability to conduct, process and publish information pertaining to the proposed poverty monitoring system (PMS);
- Operationalise the General Equilibrium (GE) model on the basis of activities of earlier phases of the project by providing technical, manpower, training and other supports to the General Economics Division (GED) of the Planning Commission (PC);
- Conduct several focus studies to provide efforts for developing the PMS as well as the analytical framework of the GE modelling exercise. The studies would comprise sector and issue studies on relevant aspects of macro policy and poverty;
- Develop and institutionalise a computerised information system to help policy makers in formulating an improved set of macroeconomic/adjustemnt and related policies and programmes for poverty alleviation and accelerated and sustainable development;

- Operationalise institutional arrangements so that national institutions (BBS and PC) could take up the project and implement the exercise on a regular basis after the project is completed;
- Establish a network for the project, consisting of representatives from relevant line ministries, departments and institutions as well as NGOs to ensure maximum awareness of and participation in the project.

2. Activities Envisaged under the Project

In order to fulfil the objectives of the project, the activities undertaken so far under the five major components of the project which include:

i) Poverty Monitoring System (PMS)

The Poverty Monitoring System (PMS) was designed to develop and institutionalise a process of monitoring the incidence of poverty on a regular basis through a set of indicators for use by the policy makers and others. The PMS was located at the Bangladesh Bureau of Statistics (BBS). The activities focussed on consolidation of the survey methodology, expansion of coverage of the indicators, dissagregation over spatial units and training and other activities. Efforts had also been given to minimise the time required in publishing the survey results.

ii) Computerised Information System (CIS)

Under the system, a computerised system of information collection, storage and retrieval with interface with Geographic Information System (GIS) has been developed to support policy deliberations.

iii) Computable General Equilibrium Model

The model was designed to analyse and monitor poverty implications of key macroeconomic and structural adjustment policies. The model has been made operational at the Bangladesh Planning Commission.

iv) Focus Studies

Focus studies were conducted on poverty related issues to supplement the modelling and poverty monitoring efforts. So far, focus study areas have covered several issues e.g. the role of public expenditure in poverty alleviation, agriculture and rural poverty, efficiency of rural markets, human resource development of the poor, poverty-environment linkages, microcredit, rural-urban migration, agricultural diversification, farm level investment and similar concerns.

v) Information Dissemination System

The project adopted a participatory approach in disseminating its activities. The relevant government institutions, NGOs and other national/international agencies acted as collaborative partners. Community visits and dialogues with relevant stakeholders; symposia/workshops/seminars; dissemination of activities and results through newsletters, policy briefs, technical/research papers, journals, features, articles and other mass media such as web site, internet etc; and interactions at local and regional levels were several methods which have been employed for wider dissemination of the project activities.

2.1 Poverty Monitoring System (PMS)

The Poverty Monitoring System (PMS) is designed to develop and institutionalise a process of monitoring the incidence of poverty on a regular basis through multi-dimensional indicators and disseminate the findings in a way that they can be of relevance to the policy makers. The Bangladesh Bureau of Statistics (BBS) was involved in implementing the PMS. So far, seven poverty monitoring surveys in the rural areas and five in the urban areas have been undertaken. The latest survey conducted in May 1999 with larger urban and rural samples capable of generating efficient poverty indicators for 23 regions (old districts) covering 16,000 samples. The survey consisted of (i) 6000 households from 300 primary survey units (PSUs) in urban areas and (ii) 10,000 households from 500 PSUs in rural areas. Earlier surveys only covered a total of 4,500 households drawn from 30 households each from 110 PSUs in the rural areas and 40 PSUs in the urban areas to provide national statistics only. Besides a pilot survey was conducted for identifying appropriate inputs for the following survey. In addition to the regular survey activities, BBS had constituted an Expert Committee to recommend an official poverty line which, in future, will be accepted as the 'national' measure for use at all levels. The committee, which included two representatives from the MAP project, to examine all relevant issues including the methodology of deriving the poverty line. The committee met several times and expected to finalise the official poverty line soon for using in the next poverty survey to be conducted by the Government.

The status of the PMS activities is summarised in Table 1.

Table 1: Status of Poverty Monitoring Surveys

Activities	Status
1. First Survey in rural areas (October 1994)	Results published
2. Second Survey in rural areas (April 1995)	Results published
3.Third Survey in rural areas (Dec. 1995)	Results published
4. First Survey in urban areas (Dec. 1995)	Results published
5. Fourth Survey in rural areas (April 1996)	Results published
6. Second Survey in urban areas (April 1996)	Results published
7. Fifth survey in rural areas (April 1997)	Results published
8. Third survey in urban areas (April 1997)	Results published
9. Sixth survey in rural areas (April 1998)	Results published
10. Fourth survey in urban areas (April 1998)	Results published
11. Pilot survey in Nov-Dec. 1998 (both in rural and urban areas)	Results not published but used as inputs for April 1999 survey
12. Seventh survey in rural areas (April '99)	Presented in the Seminar on May 2000 and Results published
13. Fifth survey in urban areas (April '99)	Presented in the Seminar on May 2000 and Results published

2.1.1 Summary Results of Poverty Surveys

One of the important characteristics of the poverty surveys was that, under various rounds, the poverty situation of the same set of households were being monitored. The methodology thus permitted the generation of `panel' data to monitor the poverty status of the households in terms of multi-dimensional indicators adopted under the survey.

2.1.2 Incidence of Poverty

For measuring the incidence of poverty, the poverty line had been estimated using the food-energy-intake (FEI) method. The incidence of poverty is given in Table 2. The poverty incidence was found relatively stable and rural poverty always remained higher than urban poverty[1].

[1] Similar results were also obtained from the Household Expenditure Surveys (HES). For example, in 1995-96 HES, rural poverty was reported at 56.65 percent and urban poverty at 35.04 percent. It should be noted, however, that HES methodology uses the Costs of Basic Needs (CBN) approach. Using the CBN method, rural and urban poverty is estimated at 58.6 percent and 45.2 percent respectively in the April 1997 poverty survey.

Table 2 : Headcount Indices of Poverty in Bangladesh

(Percentage of population below the poverty line)

Location	May 99	April 98	April 1997	April 1996	Dec. 1995
Rural	44.9	47.6	46.8	47.9	46.8
Urban	43.3	44.3	43.4	44.4	43.3
National	44.7	46.7	46.0	47.0	…

… Data not available
Source: Poverty Monitoring Surveys

Depth and Severity of Poverty

The poverty gap and the squared poverty gap measures offer additional insights on the poverty status of the households. The poverty gap is often interpreted as a measure of depth of poverty while the squared poverty gap as measuring the severity of poverty. Both the measures confirm stagnation in poverty situation (Table 3).

Table 3 : Depth and Severity of Poverty

Location	May 1999	April 1998	April 1997	April 1996	Dec. 1995
Poverty gap					
Rural	11.1	12.3	11.2	12.0	11.6
Urban	11.2	13.6	13.5	14.2	14.5
Squared poverty gap					
Rural	4.0	4.6	3.9	4.4	4.2
Urban	4.2	5.7	5.8	6.1	6.1

Source: Poverty Monitoring Surveys

2.1.3 Trends in Income Distribution

As shown in Table 4, household income distribution by decile groups suggests that the lowest decile, having a population share of 7.7 percent, receives 1.3 percent of total income in May 1999 in the rural areas. In contrast, the highest decile has an income share of 35.2 percent with a population share of 13.7 percent. The Gini coefficient is 0.36 (compared to 0.31 in April 1998).

The inequality is higher in urban areas. During May 1999, the lowest decile, with a population share of 7.8 percent, receives 1.3 percent of the total income. On the other hand, the income share of the highest decile is 39.9 percent with a population share of 12.6 percent. The Gini coefficient is 0.42 (0.43 in April 1998).

Table 4: Income distributions of urban and rural households by decile groups

Decile group	May 99		April 98		May 99		April 98	
	popn	income	popn	income	popn	income	popn	income
	Urban				Rural			
1	7.8	1.3	7.8	1.2	7.7	1.3	6.9	1.5
2	8.2	2.9	7.8	2.6	8.0	3.2	7.9	3.1
3	9.0	3.9	8.1	3.4	8.4	4.2	8.4	4.1
4	9.4	4.7	9.3	4.2	9.2	5.2	9.2	5.2
5	9.9	5.6	9.7	5.2	9.7	6.3	9.8	6.2
6	9.8	6.9	10.3	6.5	10.0	7.5	10.1	7.6
7	10.5	8.7	10.7	8.3	10.3	9.3	10.3	9.1
8	10.9	11.1	11.1	10.4	11.0	11.7	11.4	11.7
9	11.9	15.0	11.3	14.6	12.0	16.1	12.2	15.9
10	12.6	39.9	14.0	43.6	13.7	35.2	13.8	35.6
Gini coefficient	0.42		0.43		0.36		0.31	

2.1.4 Characteristics of the Poor

Income: According to the poverty surveys, average monthly household and per capita incomes situation improved significantly across the poor and the non-poor as well as between rural and urban areas (Table 5). In the rural areas, the average household income in nominal terms for the poor has increased by 43 percent over the December 1995 to May 1999 period, whereas the increase is nearly 20 percent for the non-poor. During the same period, similar increase in the urban areas has been 75 percent for the poor compared to nearly 13 percent for the non-poor.

Table 5 : Average Monthly Household and Per Capita Income

(in tk)

Survey	Household Income				Per Capita Income			
	Rural		Urban		Rural		Urban	
	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor
May 1999	3006	5235	4741	10462	559	1067	902	2270
April 1998	2303	5080	3423	10413	436	988	637	2050
April 1997	2148	5024	2847	12443	403	1001	539	2489
April 1996	2079	4682	2510	11571	394	931	478	2328
Dec. 1995	2103	4347	2702	9288	396	873	506	1854

Source: Poverty monitoring surveys (various years)

Expenditure : In case of average monthly household expenditure as shown in Table 6, the poor are observed to spend tk. 2272 compared to tk 5031 for the non-poor in the rural areas in May 1999. In urban areas, the average monthly household expenditure in May 1999 was

estimated at tk 3223 for the poor and tk 8288 for the non-poor. The distribution of household expenditure by decile groups from the survey suggests that the lowest decile, with 6 per cent of the population, has a share of 3 per cent of total expenditure. The highest decile, on the other hand, has population and expenditure shares of 14 per cent and 31 per cent respectively. The Gini coefficient of expenditure distribution is 0.28.

Table 6: Urban and rural monthly per household expenditure

(Tk)

Survey	households		
	all	poor	nonpoor
Urban			
May 99	6256	3223	8288
April 98	6092	3102	8339
April 97	5832	2632	8157
April 96	5285	2320	7530
December 95	5601	2510	8626
Rural			
May 99	3885	2272	5031
April 98	3284	1989	4428
April 97	2915	1791	3845
April 96	2752	1724	3651
December 95	2819	1655	2787

The monthly per capita expenditure in the urban areas in May 1999 was higher than April 98 by 9.7 percent for all households and 4.8 percent and 8.0 percent for poor and nonpoor households. For rural households the expenditure in May 99 was Tk. 755, it was more than April 98 expenditure of Tk.630 by 19.8 percent. In case of rural poor and nonpoor households the per capita expenditures of Tk. 422 and Tk. 1026 were higher by 12.2 percent and 19.0 percent respectively (Table 7).

Table 7: Urban and rural monthly per capita expenditures

(Tk.)

survey	households		
	all	poor	nonpoor
	Urban		
May 99	1285	613	1798
April 98	1171	585	1665
April 97	1141	498	1631
April 96	1040	444	1515
December 95	1126	474	1572
	Rural		
May 99	755	422	1026
April 98	630	376	862
April 97	572	339	769
April 96	540	331	730
December 95	548	313	760

Food Intake: In the rural areas, the average daily per capita food intake for the poor is 742.8 gm while for the non-poor it is 1052 gm in May 1999. In the urban areas, similar figures are 737 gm for the poor and 1073 gm for the non-poor (Table 8).

Table 8 : Daily Per Capita Food Intake, May 1999

(gm)

Item	Rural		Urban	
	Poor	Non-poor	Poor	Non-poor
Rice	410.3	467.9	379.0	384.2
Other cereals	34.5	58.7	48.8	83.3
Potato	45.6	67.3	63.3	79.0
Vegetables	129.7	170.0	108.1	167.4
Milk & Milk Products	12.3	45.8	11.4	48.0
Meat, fish, egg	29.1	74.3	39.2	111.4
Pulses	18.2	29.8	19.4	26.7
Others	63.2	138.4	67.5	172.2
Total	742.8	1052.1	736.7	1072.7

Source: Poverty Monitoring Survey, May 1999

In the rural areas, the proportion of total expenditure spent on food is 78 per cent for the poor compared to 69 per cent for the non-poor. The poor spend 37 per cent of their total food expenditure on cereals whereas similar share for the non-poor is 22 per cent. In the urban areas, the share of expenditure on food is 72 per cent for the poor and 58 per cent for the non-poor. The poor's expenditure on cereals is 30 per cent of the total food expenditure compared to 14 per cent for the non-poor.

Calorie Intake : In the rural areas, the daily per capita calorie intake of the poor is 1932 k.cal compared to 2555 k.cal for the non-poor in May 1999. For the poor, 75 per cent of the calorie is derived from rice compared to 64 per cent for the non-poor. For the urban poor, the calorie intake is 1923 k.cal and urban non-poor 2508 k.cal. The urban poor derives 69 per cent of the calorie from rice compared to 54 per cent for the non-poor.

2.1.5 Socioeconomic Correlates of Poverty

Land ownership : The more land a household owns, the less likely that it is poor. Landless households are most likely to be poor, particularly in the rural areas. Among the landless in rural areas, six out of ten are likely to be poor while, in urban areas, five out of ten are poor (Table 9). Among the large rural landowners (owning at least 7.5 acres), only one in five is poor.

Table 9: Headcount Index by Land Ownership, May 1999

(percentage of population below poverty line)

Land ownership class	**Rural**	**Urban**
Landless	66.6	50.1
Small	49.6	43.5
Medium	26.3	36.0
Large	17.5	16.1

Note: Small: up to 2.49 ac, medium: 2.50 ac to 7.49 ac, large: 7.50 ac and above
Source: Poverty Monitoring Survey, May 1999

Occupational Status : In the rural areas, owner-farmers have the lowest probability of being poor (34 per cent) while tenant farmers, agriculture labourers, production and transport labourers and household heads involved in other agriculture have high incidence of poverty (Table 10). In the urban areas, poverty incidence is high among agriculture-dependent and labour households. Household heads belonging to management and professional groups and trade and business have relatively low poverty rates. The relatively lower poverty incidence among non-farm activities in the rural areas suggests that the growth of the rural non-farm sector represent an attractive policy option in reducing rural poverty.

Table 11 : Headcount Index by Occupational Status of Household Head, May 1999

(Percentage of population below poverty line)

Occupation	Rural	Urban
A) agriculture		
Owner farmer	28.2	49.8
Owner cum tenant farmer	40.4	71.8
Tenant farmer	49.9	71.6
Labour (land owning)	61.4	68.5
Labour (landless)	70.8	85.3
fishery	56.6	82.1
Livestock	74.0	60.1
poultry	21.3	57.6
Other agriculture	43.3	56.5
b) non-agriculture		
Officers	9.0	7.9
Staff	32.0	26.9
Teaching	17.6	17.1
Business	38.4	30.4
Production labour	60.9	60.7
Garments worker	55.0	60.0
Construction labour	51.9	62.2
Transport labour	41.5	53.5
Other labour	63.5	78.4
Driver (rickshaw/van/push cart)	60.7	75.3
Black smith/gold smith)	32.8	52.6
Pottery	59.6	100.0
Weaving	45.9	73.8
Carpentry	47.9	59.7
Professional (lawyer/doctor/engineer)	7.9	12.2
Tailor, laundry/barber	46.7	57.5
Others	45.3	44.7

Source: Poverty Monitoring Survey, May 1999

Crisis and Crisis Coping: The poor encounter different types of crisis for which they adopt a number of coping measures. Borrowing and sale of land and other assets are the common coping measures that are adopted by a large number of households (Table 11).

Table 11 : Crisis and Crisis-coping by the Poor, May 1999

(Percentage of households)

INCIDENCE OF CRISIS			CRISIS-COPING MEASURES		
Nature	Rural	Urban		Rural	Urban
Death of main income earner	5.2	22.3	Expenditure from saving	11.8	15.2
Large scale exp. for medical treatment	29.6	22.4	Sale of land & other assets	9.7	6.5
Loss of crops	23.2	13.0	Borrowing	53.1	56.0
Dowry payment	2.5	4.8			
Property damage due to flood/cyclone	12.2	12.2	Others	25.4	77.7
others	27.3	25.3			

Source: Poverty Monitoring Survey, May 1999

2.1.6 Gender Disparities

Women in Bangladesh play an indispensable role in the socio-economic development and in improving the quality of life of poor households. Much of their contributions, however, remain unseen, unrecognized and unaccounted for in relevant statistics. Recent development concerns, reflecting both efficiency and equity considerations, emphasize that efforts to achieve sustainable development and poverty reduction are unlikely to be successful unless gender issues are properly addressed. The gender concerns of poverty relate to three major interrelated issues e.g.

- existence of double burden for the poor women resulting from living in poverty and being female;
- presence of socio-economic, cultural, political and other factors which prevent them from playing their due role and preclude them from benefiting from the development process; and
- continued generation of adverse impact on the poor women of conventional development interventions under the existing gender biased environment.

Women, who comprises 49 per cent of the total population, have shorter lives than men: the female life expectancy at birth is 57.9 years compared to 58.2 years for men. The share of females is higher for the age groups between 20-24 years and 30-34 years with declining trends for the remaining age groups. In the rural areas, a higher proportion of women belong to poor households and they are more likely to belong to labour selling households; which are among the poorest in terms of incomes and resource endowments. The female, specially in

rural areas, gets smaller shares of household expenditures on education, health and other facilities.

A number of other characteristics, both at household and community levels, have also been related to poverty incidence under the PMS. Such correlates of poverty provide information on multi-dimensional aspects of the profile of the poor. For instance, the summary information suggests that:

- Higher levels of education and land ownership are associated with a lower probability of being poor;
- Rural households with heads working in the nonfarm sector are less likely to be poor than landless farm workers;
- Female-headed households are poorer than their male-headed counterparts;
- The present pattern of income growth is associated with higher inequality.

The above findings suggest that:

- While land ownership is a key determinant of rural poverty, access to education is more important in urban areas;
- There are large differences in the incidence of poverty across occupations;
- The participants in the nonfarm sector are relatively better off than labour households in the farm sector.

The policy implications of the above may be summarised as follows:

- While economic growth is essential for poverty reduction in Bangladesh, maintaining pro-growth economic fundamentals that prevent increases in inequality is critical;
- Investment in human capital of the poor is necessary for their participation in the growth process;
- Measures are necessary for promoting occupational shifts in rural areas from the farm to the nonfarm sector through using micro credit and other measures to increase nonfarm employment opportunities;
- Enhanced economic participation of women, particularly of female-headed households, is essential for addressing gender issues in poverty.

2.1.7 Institutionalisation and Capacity Building under the PMS

The collaborative effort of poverty monitoring with the Bangladesh Bureau of Statistics (BBS) under the MAP Project had led to significant long-term capacity building within BBS

with spillover effects to other agencies. Under the project, the BBS designed and fielded the poverty monitoring surveys with improved methodology for measuring poverty. The work on mainstreaming poverty analysis with multi-dimensional indicators into the policy design, implementation and evaluation was an integral part of the process.

The cooperative effort has been contributed to better design of poverty surveys specially the integrated approach adopted for the survey with special-purpose modules covering selected indicators both at household and community levels. The survey methodology improved with innovations in data collection and entry procedures. The long delays in publishing the results have been avoided.

The BBS staff has been trained not only in conducting poverty surveys but also in broader issues of poverty measurement and analysis to help improve data collection. Poverty monitoring seminars and other collaboration under the project have provided useful forum for promoting a dialogue among the policy makers, researchers, development partners and others on suggesting ways to mainstream poverty analysis in policy making and designing programmes/ projects. The survey results were widely used, both by the government and the development partners, for assessing the poverty status in the country.

2.1.8 Impact of the PMS

The implementation of the PMS under the project has resulted in substantial improvements in the coverage as well as overall design of poverty surveys in Bangladesh. In particular, improvements are visible in a number of areas e.g. coverage of (i) rural and urban population representing different geographical regions, (ii) multi-dimensional indicators of poverty with individual, household and community characteristics, (iii) seasonal as well as annual data relating to state and process dimensions of poverty in both rural and urban areas. Moreover, elimination of delays between the time of data collection and their availability to policymakers, planners, researchers and other users has greatly enhanced the relevance and applicability of poverty statistics in the country.

2.2 Computerised Information System (CIS)

Since the start of the MAP project, new research directions, priorities have been emerged with learning by doing. Time to time changes and improvements were done according to the project requirement. One of such changes is the creation of computerised Information System (CIS). The CIS was designed and initiated to create integrated database and process display, archive and disseminate poverty related information with technical assistance from the Space Research and Remote Sensing Organisation (SPARSO). The major objective of the CIS was

to develop and institutionalise a computerised system of information collection, storage and retrieval on poverty profile through access to quality data. In the design of CIS, Geographic Information System (GIS) had been included as an useful tool for analysing poverty related data in the spatial domain. The socioeconomic (SE) data which mainly relate to poverty was transferred to GIS for spatial manipulation and analysis. According to the design of CIS, database structure of the SE data had been created in Dbase format. The activities undertaken to operationalise the CIS were:

- Hardware and software (DMS, GIS) of the CIS;
- Data Collection and entry in DBMS;
- Integration of DBMS with GIS and development of customised software for GIS data analysis and output generation;
- Demonstration of Case Studies showing utilisation of CIS using the collected data and data available from secondary sources. (The data/information gathered through the PMS surveys have been processed on an experimental basis and presented in an Expert Group Meeting in September 1997 at CIRDAP HQs);
- Training of users on GIS; and
- Preparation of final report.

A hands-on training was conducted in March 1998 for the PMS staff of BBS and MAP staff to take full advantage of the proposed CIS structure and relate it to GIS and other software. The list of trainees is at **Annex- 2**. A user manual has been prepared and published in Nov. 1998. The final report submitted to CIRDAP in May .2000 is enclosed herewith for reference.

2.2.1 Major Findings of the CIS Component

The resources of SPARRSO were configured according to the design of the CIS, and were used for carrying out the tasks for taking the CIS operational. After installation of the hardware and the software, the users, with a short duration on-the-job training can operate the system.

The CIS through its demonstration case studies and the output provided in the report has been proved to be a useful tool for poverty monitoring in Bangladesh. Still there are scopes for improvement and expansion of areas of CIS through improving the database and adding the spatial and attribute data on environmental, resources, vulnerability of disasters, infrastructure and development. This needed substantial improvement of the software for professional working under NT or UNIX operating systems for customisation of the analysis and generation of the display products. The CIS is expected to provide more comprehensive

database for conducting multi-layer/multi-dimensional analysis to develop and implement the effective poverty alleviation programmes. Such a tool will allow to investigate the results of the structural adjustments. A comprehensive database will help the prospective users in analysing the economic productivity, marketing facilities, transportation of the commodities, suitability modelling and developing Decision Support System (DSS) in agricultural, industrial, aqua-cultural, energy and power development sectors where the economic, social, environmental, demographic and many other factors/dimensions could be considered. This approach is of multi-sectoral/multi-disciplinary character and generation and preparation of reliable and up-to- date database would involve a huge resource and longer time.

2.3 Computable General Equilibrium Model

In order to monitor and examine the consequences of adjustment policy, a general equilibrium framework has been developed to examine the impacts on resource allocation, income distribution, growth and poverty reduction, and welfare. The modelling exercise was done to answer the following issues e.g.

- What would be the impact of reduction of nominal rate of protection on allocation of resources and distribution of income?
- What would be the effects of tariff reduction under neutrality of government revenue constraints on allocation of resources and distribution of income?
- What are the potential revenue and incidence implications of raising additional revenue from manufacturing VAT base and services VAT base?
- Does incorporation of imperfect competitive behaviour change allocation of resources compared to competitive behaviour?
- What are the scale economies effects on allocation of resources?
- What are the income and own and cross price elasticity of food items for different household groups in Bangladesh?
- What are the impacts of macroeconomic policy changes on the micro level decision making (e.g. nutrition status of household groups)?
- What would be the impact of sectoral growth on poverty?
- What are the impacts of tariff liberalisation on poverty?

The framework of analysis, therefore, consisted of (i) a CGE model to examine resource allocation, and income distribution effects under different market structure and trade and tax structure; (ii) elasticity model to estimate own and cross price elasticity for major food items and income elasticity by household groups; (iii) a linked model that uses estimates of elasticity and price and income changes from CGE model to examine the macro policy impact at micro level; (iv) a SAM based modelling framework to estimate poverty alleviating impacts of sectoral

growth; and (v) construction of a Flow – of -fund to consolidate the financial transactions between major institutions and production sectors of the economy.

The model is now fully operational. After successful calibration, a few test simulations have been carried out and the results have been published and circulated. Besides, training programmes were arranged in phases during 1998 on SAM, GAMS Programming and CGE model for the Planning Commission officials and MAP staff. A list of the participants is given at **Annex-2**. Manuals for operationalisation of the model and SAM construction has been prepared and published. A Regional Seminar for GE modellers to share experiences of the Micro Interventions on Macro Economic Adjustment Policies (MIMAP) participating countries was held in March 1999.

2.3.1 Major Outputs/Findings Under the Component

Under the component, the economy of Bangladesh has been numerically specified within the framework of a Social Accounting Matrix (SAM) for the fiscal year 1992/93. The SAM has been developed around an input-output table showing the inter-relationships between economic activities in the economy, traces the inter-industry transactions and maintains consistency between supply and demand for commodities. The social accounting matrix developed to serve the purposes of: (i) data system for descriptive analysis of the Bangladesh economy, and (ii) basis for modelling.

SAM was also useful for policy analysis which could focus on socio-economic linkages in the economy and on simulation of policy reforms using both SAM-based fixed price models and flex price computable general equilibrium models. The SAM constructed under the project also used as analytical tool for income distribution as it incorporated the linkage between factorial distribution of income by nine factors and personal distribution of income by six households groups.

Realising the fact that, raising the living standards of the vast majority of the poor is the prime objective of development efforts in Bangladesh, the macro framework has been used to analyse the poverty profile and estimate sectoral poverty alleviation impacts. As a part of the regular updating of the database, the production of a revised SAM and related tables for the year 1993/94, based on the Planning Commission's new 1993/94 input-output table constructed in 1998, have been completed in January 1999. An innovative feature of the new SAM is the inclusion of 'female headed households' as a separate group. The output under the component is given under the list of publications.

2.4 Focus Studies

Focus studies include in-depth analysis of poverty-related issues to supplement the modelling and poverty monitoring efforts. The studies were undertaken on areas of policy relevance in the country. During the third phase of the project, ten studies were initiated out of which nine studies have been completed and published, while work on remaining one is underway and report will be published as soon as submitted to CIRDAP. The status of the focus studies implemented under the third phase of the project is given below:

Focus Study	*Researcher(s)*	*Status (March '01)*
1) Agricultural Production Cycle and Poverty in Bangladesh: A Study of Five Villages	Prof. Shamsul Alam; Prof. M.A Hamid; Prof M.I. Zuberi; Prof. M Mizanuddin, Rajshahi University	Report published in August '98
2) Agricultural Growth and Stagnation in Bangladesh	Dr. Q. Shahabuddin; Rushidan Islam Rahman, BIDS	Report published in July '98
3) Public Expenditure and Social Development in Bangladesh	Dr. O.H. Chowdhury; Dr. Binayak Sen, BIDS	Report published in October '98
4) Structural Adjustment Policies and Labour Market in Bangladesh	Prof. Ismail Hossain; Prof Syed Abdul Hye; Prof. Amin Md. Ali, Jahangirnagar University	Report published in July '98
5) Macroeconomic Adjustment Policies and Natural Resources and the Environment in the Rural Areas: Impact Assessment at the Micro-level.	Md. Shafiqur Rahman and Lisa S. Sing	Report published in January 2001
6) Efficacy of Alternative Poverty Alleviation Programmes in Bangladesh	Prof. Momtazuddin Ahmed, Dhaka University	Report published in January 2001
7) Farm Level Investment in Bangladesh Agriculture	Dr. Rushidan Islam Rahman, BIDS	Report published in January 2001
8) Microcredit, Microenterprises and Poverty	Prof. Wahiduddin Mahmud, Dhaka University	Draft report not yet submitted as of 14 March 2001
9) Interlinkages of Agricultural Diversification in Rural Bangladesh	Dr. Lutfor Rahman et. al., Planning Commission and Bangladesh Agricultural University	Report published in January 2001
10) Rural - Urban Migration and Poverty: The Case for Reverse Migration in Bangladesh	Prof. Ayubur Rahman; Prof. Harunur Rashid Khan; Sultan Ahmed; Iqbal Ahmed Syed, Bureau of Economic Research, Dhaka University	Report published in January 2001

2.4.1 Findings of the Completed Focus Studies

2.4.1.1 Agricultural Production Cycle and Poverty in Bangladesh: A Study of Five Villages

A comprehensive understanding of poverty and its interrelated aspects is an important pre-requisite for achieving a faster and sustainable rate of improvement of the livelihood of the rural poor. To facilitate the understanding of poverty at the grassroots level and the formulation of appropriate poverty reduction policies, the study analyzes the agricultural production system to identify the relationships between the seasonal and spatial variability in agricultural production cycle and the linkages between foodgrain production cycle and poverty.

Agricultural Production System

A review of the micro-level data, collected from five villages representing different agro-ecological zones and socioeconomic characters in North West Bangladesh, suggests that the agricultural production system is very heterogeneous at the micro-level, and such spatial variations in the natural resource components seriously affect agricultural production, the production cycle and the incomes of the farmers. Especially factors like land level, soil and water vary widely and play a key role in controlling agricultural production. Droughts due to irregular rainfall and non-availability of irrigation water make the poor farmers more vulnerable to production loss and to poverty.

The absence of conservation of the natural resource-base results in intensification of the effects of seasonal fluctuations; and environmental degradation magnifying the negative impacts on agricultural production. Lower rates of and regular losses in production due to spatio-seasonal variations in environment indicate the instability of the production system. The traditional measures, serving as established practices of soil, water and other resource conservation originating from indigenous technical knowledge, are mostly abandoned by the farmers as they adopt modern agriculture.

The analysis of the agricultural production system indicates an excessive dependence on paddy rice which destroys the stability and diversity of the long established agricultural system. The consequences have been low and loss of production, increased vulnerability and intensification of poverty. The environmental heterogeneity also affects cropping intensity and net production contributing directly to poverty. Though modern technology has contributed to increased foodgrains production, the stability and sustainability of the system has deteriorated in many areas.

The policies relating to input distribution and pricing at the macro-level affect the small and poor farmers and their production system, contributing to poverty at the micro-level. The withdrawal of subsidies on agricultural inputs, in the absence of complementary compensatory measures, is noted by the poor farmers to contribute to loss in production. The creation and expansion of non-agricultural incomes play an important role in the livelihood and in the coping strategies of the poor and the landless.

A direct relationship between seasonal variability and the level of production along with substantial variations across different agro-ecological zones are revealed. The results also indicate a close relationship between the production and availability of foodgrains. The extent and the time span of the lean period vary widely across locations. Moreover, the villagers of different social groups are not uniformly affected. For the landless, the lean period often extends throughout the year. Non-farm incomes reduce the severity of the lean period, so that increased access to such incomes reduces the importance of household foodgrains production in identifying and mitigating the issues of the lean periods. In the study areas, the lengths of the critical periods vary between 45 days and 90 days and span between *Bhadra* and *Agrayahan;* the most difficult time being *Ashwin* and *Kartik.*

Seasonality and Spatiality in Foodgrains Availability

The differences between the rich and the poor is more pronounced in areas with more acute seasonal variations, and the differences are greater during the 'good' periods than in the 'lean' periods. The seasonal variations in foodgrains availability are experienced by the poor households.

The influence of bio-physical environment on the rural economy and the culture is modified by the adopted technologies and interventions. The poor adopt different measures to meet the demands of survival during the crisis periods. As permitted by the social environment and natural resources, they take loans, sell goods, borrow crops and food, sell labour, catch fish, involve in petty business, pull rickshaw or temporarily migrate to cities to cope with the crisis. Another common strategy of the poor is to keep the size of the family small, a positive approach towards poverty mitigation. The economic hardship during the lean periods are found to weaken or even break the kinship bonds or family relations.

The village poor do not have easy access to education, vocational or technical training to equip them to face the diverse challenges of the modern society. The rural women are more vulnerable to unemployment and loss of livelihood in the rural society, particularly during natural disasters and social tensions.

The general approach in macro-level planning to consider the agricultural production system as uniform and easily predictable, is of limited relevance in the context of poverty alleviation. The spatio-seasonal variations with their impacts on the production system and foodgrains availability can be measured meaningfully and accounted for at the micro-level through participatory problem identification and interventions. The integration of appropriate measures that allow such micro-macro linkages is essential to promote a pro-poor macro-level framework for poverty alleviation.

2.4.1.2 Agricultural Growth and Stagnation in Bangladesh

Despite its declining share in GDP, agriculture remains as the leading sector of the Bangladesh economy. Within agriculture, the production of foodgrains (particularly rice) assumes special significance for a number of reasons. Foodgrain production in Bangladesh experienced an average growth of 2.32 per cent during the eighties, which exceeded population growth during the period. The rapid dissemination of modern technology, particularly HYV rice during the boro season, largely contributed to such a growth. The early and mid-nineties, however, witnessed considerable deceleration in growth in rice production in the country. Although the production level remained above the trend line till 1993/94, the growth rate in rice production declined significantly during the 1990/91 to 1995/96 period. In fact, after a jump in production in 1989/90, rice production has virtually stagnated at around 18 million tons in recent years. This underscores the need to examine the future foodgrain production prospects and ascertain whether the slowdown is a temporary phenomenon as a part of the regular production cycle or a signal of approaching the technological frontier under the existing production techniques.

While several studies have identified some proximate causes of such deceleration of growth in terms of slow expansion and/or stagnation of growth-augmenting inputs such as irrigation and fertilizer as well as declining trend in land productivity and lack of production incentives (e.g. adverse movement of fertilizer/paddy price ratio), an indepth enquiry into the resource base, technology choice, agronomic constraints, pricing and distribution policies and similar other aspects is required to address the problems satisfactorily. The exploitation of future production potential and assessment of future production and trade prospects also crucially depend on the outcome of such an enquiry. The impact of economic policy reforms and farm-level resource use is also related to the concern for a healthy environment and a stable natural resource base which are critical to the adoption of an environment-friendly perspective in agricultural policy making.

Growth Performance of Agricultural Sector

While examining the nature and extent of recent stagnation in agriculture, particularly in crop production in the country, it has been observed that the growth of agriculture has considerably

declined in recent years -- from more than 1.80 per cent during the seventies (1.85 per cent) and the eighties (1.83 per cent) to less than one per cent (0.86 per cent) in the early and mid-nineties (1990/91-1994/95). The reason is not far to seek. The crop sector, with a predominant share (77 per cent of total value-added in agriculture) grew at a rate of 2.37 per cent during the seventies and 1.77 per cent during the eighties but hardly registered any growth in recent years.[2] Fishery and livestock, on the other hand, display substantial improvement in growth performance in recent period. The annual growth rates of fishery and livestock has increased from 2.24 per cent and 1.36 per cent during the eighties to 7.52 per cent and 6.56 per cent respectively during 1990/91-1994/95 period. The growth performance of forestry sub-sector also improved but marginally (annual growth rate increased from 2.60 per cent during the eighties to 3.40 per cent during early mid- nineties) in recent period.

Within the crop sector, rice dominates in Bangladesh, with an acreage and production share of over 74 per cent and 72 per cent respectively. It is, therefore, not surprising that the growth performance of crop sector has been largely dictated by production performance of rice in the country. The trend growth rate of rice production during the post-independence period (1972/73-1994/95) is estimated to be 2.38 per cent, which is largely due to growth in yield during the period.[3] A comparison of rice production growth in different sub-periods indicate that there has been a deceleration in growth of rice production over the last two decades. The trend growth rate declined from 2.79 per cent during the seventies to 2.32 per cent during the eighties. This may be largely attributed to deceleration in growth in acreage and production of aman, particularly local aman during the eighties as compared to the seventies.

The slowdown is particularly pronounced in recent years. The trend growth rate for the 1990/91-1994/95 period is estimated to be -1.37 per cent. The negative trend is mainly because of the absolute fall in production in 1994/95 (due to severe drought) compared to the level attained in 1993/94. Production of rice in 1995/96 amounted to 17.69 million tons which hardly contributed towards improved growth performance during the early and mid-nineties. This deceleration in rice production growth can largely to attributed to a significant decline in growth in HYV boro production in recent years (only 0.90 per cent during 1990/91-1994/95 period as compared to 10.56 per cent during the eighties). This in turn is due to a significant decline in growth in acreage under HYV boro during the nineties (only 1.23 per cent) as compared to the eighties (11.26 per cent). The decline in growth in both local and HYV aman during the early nineties has also contributed towards such a drastic deceleration in rice production growth in recent years.

[2]In fact, the trend growth rate of crop sector has been estimated to be -0.68 per cent over 1990/91-1994/95 period.
[3]It should be emphasized here, however, that the increase in yield is due to reallocation of land in favour of high yielding variety rather than yield improvement of individual variety.

Proximate Causes of Stagnation in Crop Production

The slowdown in production growth occurred in the absence of any major natural disaster in recent years (except for the drought in 1994/95). One can, therefore, legitimately ask whether such a drastic slowdown in growth is a transitory phenomenon (part of the regular production cycle) or is it threatening to become a permanent feature of rice production system as technological frontiers are gradually approached. This study has attempted to provide an answer to this question both in terms of some proximate determinants of production growth such as recent trend in use of growth-augmenting inputs such as irrigation and fertilizer, trend in land productivity and farmer's production incentives as well as resource base, technology choice and agronomic constraints to intensified rice cultivation in the country.

It has been observed that although the use of chemical fertilizer increased at an annual rate of 9.23 per cent over the last two decades, the growth in fertilizer use decelerated over time -- from 13.16 per cent during the seventies to 9.98 per cent during the eighties, and further to 6.63 per cent during the early and mid-nineties. The decline is most pronounced in case of TSP and MP, due to the increase in their prices following the removal of explicit subsidy and privatization of the import trade in recent years. The consequential deterioration in the relative price ratio (relative to price of urea, which is mostly domestically produced) has aggravated the unbalanced use of different types of fertilizer resulting from inadequate complementation of non-nitrogenous fertilizer in total application with adverse impact on soil fertility and crop productivity.

The trend growth of irrigated area is estimated to be 4.25 per cent over the 1972/73-1994/95 period. The growth, however, decelerated over different sub-periods -- from 4.21 per cent during the seventies to 4.05 per cent during the eighties and further to only 2.56 per cent during the first half of the nineties. The deceleration is most pronounced in case of surface water irrigation, which registered a negative growth both during the eighties (-2.84 per cent) and the early and mid-nineties (-6.21 per cent). The growth in tubewell irrigation also declined from 14.67 per cent during the eighties to 7.65 per cent during the early and mid-nineties. This can be attributed to a decline in the growth of irrigated areas both through shallow and deep tubewells in recent years.

There has been a steady decline in acreage devoted to rice production over the 1989/90 - 1994/95 period. This can largely be attributed to a decline in net area sown in the country due to encroachment of other uses in land available for cultivation in recent years.[4] The declining trend

[4]For example, land not available for cultivation has increased from 3.22 million hectares in 1990/91 to 4.15 million hectares in 1993/94 -- an increase of 30 per cent over a period of only three years.

in rice acreage is a matter of concern, particularly when this has not been accompanied by a corresponding increase in the acreage of non-rice crop.[5]

The productivity indicators provide a disconcerting picture about factor productivity in Bangladesh agriculture. The productivity estimates for irrigation exhibit a declining trend (-6.99 per cent per annum) over the last two decades, indicating that the productivity gains through irrigation have been on the decline. The estimates of incremental fertilizer productivity also exhibit a similar declining trend over the last two decades. The apparent declining trend in fertilizer productivity tends to support two hypotheses relating to agronomic constraints to the growth of rice-based crop agriculture. First, the intensification of rice monoculture is liable to be detrimental to soil fertility. There is an increasing concern in Bangladesh about the likely adverse effect on crop yields from depletion of micro-nutrients and organic matters in soil. Second, the rapid expansion of the area under HYV boro rice may have increasingly led to its cultivation in relatively less suitable lands.

An analysis of past pattern of growth in rice production, disaggregated by regions (old districts), indicates that the growth points have shifted from one period to another. While all the regions have had at least moderate growth in one period or another, the early-starters have generally lagged behind other regions in later periods. The exhaustion of easy sources of irrigation is a likely reason why production growth at the regional level has not been sustained over prolonged periods. But the explanation may also partly lie in the hypothesis mentioned earlier regarding the agronomic constraints to intensified rice cultivation.

Resource Base, Future Growth Potential and Incentive Structure

A critical review of land and water resources development potential reveals that there are several factors which seem encouraging as far as prospects of future growth in crop production are concerned. Bangladesh is a flat land where most of the soil is alluvial and fertile. Also, the temperature and daylight hours are ideal for the growth of subtropical crops. On the other hand, one has to look at the physical constraints to the realization of the potential in agricultural production. Though water is plentiful, there can be too little or too much of it during the critical periods of crop growth. Although the land topography is generally flat, even slight variation in elevation can cause disastrous problems for growing standing crops during sudden and prolonged floods. Although the soil, on the whole, is fertile, not all soils are equally so and there are several areas with problem soils where selective nutrients and fertilizer are required to make the soils suitable for cultivation.

[5]Among the non-rice crops, the acreage of wheat, vegetables and potato displayed some upward trend in recent years.

It has been observed that considerable potential for expansion of irrigation exists in Bangladesh. Less than half of the development potential for irrigable land has been exploited so far. However, it is also noted that most of the easy sources of irrigation has been exhausted and further exploitation of irrigation potential will become increasingly difficult, since a significant proportion of the future potential can be exploited only through forced mode technologies (such as DTW). In fact, there are 130 Thanas in Bangladesh, where only DTWs are technically feasible in the sense that aquifer conditions are such that abstraction of water is largely possible through forced mode technologies.

Recent studies have shown that development cost of forced mode technologies (e.g. DTWs) is five to ten times higher than that of suction-mode technologies (e.g. STW, treadle pump). As such they are not commercially viable to farmers at full cost pricing of the equipment. In fact, the withdrawal of subsidies have exposed the weakness of this technology in abstracting ground water in conditions obtaining in the country. Moreover, following the withdrawal of BADC from minor irrigation, a temporary vaccum has been created in the repair and maintenance of deep tubewells. In many areas, the private markets have not been able to provide adequately the support services for operation and maintenance of deep tubewells.

Even for the relatively thriving shallow tubewells, there is a need for improvement in order to promote further development of irrigated agriculture. Many support services such as technical and aquifer information service, mechanical training etc are underdeveloped and credit is insufficiently accessible, both to farmers and equipment traders. As a result, research and extension of appropriate on-farm water management technology for efficient use of irrigation water for different crops are lacking.

The empirical studies carried out using farm level data during the late eighties regarding profitability of groundwater irrigation indicate that the returns from HYV boro paddy cultivation using tubewell irrigation have declined from both tubewell owners/managers and water user's point of view. The proximate factors underlying the fall in profitability in tubewell irrigation in Tangail was found to be the decline in the size of the command area and increase in costs of operation and maintenance. Moreover, reduction in yield and/or price of irrigated boro affected directly those water sellers who received payment of one-fourth of crop share, and affected indirectly those who received irrigation charges in the form of a fixed cash rate per unit area. The factors contributing to the decline in the profitability of HYV boro cultivation using tubewell irrigation during the eighties seem to have operated, possibly intensified in the early and mid-nineties, thereby posing constraint to the growth of irrigation during the period. This is reflected, at least partly, in the estimated trend in the financial profitability of major rice crops (local aman, HYV aman and HYV boro) during the 1984/85-1994/95 period.

Consequences of Agricultural Stagnation: Food Gap, Foodgrain Availability and Rice Prices

The consequences of recent agricultural stagnation, particularly in rice production have been explored at both aggregate and disaggregate levels. The stagnation in rice production has been amply reflected in the growing "food gap" (defined as foodgrain requirements not met from domestic production) in the country. In fact, the jump in rice production by more than two million tons in 1989/90 first narrowed the "food gap" during the early nineties (1990/91-1992/93) as compared to the late eighties. However, as rice production continued to stagnate around 18 million tons, the "food gap" reemerged with greater magnitude during the mid-nineties (1993/94 - 1995/96). The proportion of total foodgrain requirements met from domestic production has declined from more than 90 per cent during the early nineties to about 84 per cent over the last three years.

The eighties have witnessed a relatively satisfactory growth in total availability (with a trend growth rate of 2.40 per cent, which surpassed the population growth (1.92 per cent) during the decade. As a result, per capita availabile increased during the period. This is attributed to satisfactory growth in total availability of both rice and wheat during the eighties. Total availability of foodgrains, however, displayed a negative trend in the early and mid-nineties. This is largely attributed to a decline in total availability of rice during the 1990/91 - 1995/96 period. As a result, per capita availability of both foodgrains and rice declined sharply during the period.

It needs to be emphasized here that although during the early and mid-nineties, per capita availability of rice, on an average, was greater than those during the eighties, it declined sharply over the last three years (1993/94, 1994/95 and 1995/96), as rice production continued to stagnate (even declined in 1994/95 by more than one million ton) around 18 million tons, in the face of the growing need to feed the increasing population. This happened even with a hgiher level of imports in recent years as compared to the early nineties. This is also reflected in the foodgrain balance sheet for the 1990/91-1995/96 period. Per capita foodgrain intake declined from 457 gm/day in 1990/91 to 433 gm/day in 1995/96.

The continued stagnation in rice production began to exert considerable upward pressure on foodgrains prices since early 1994. In fact, the price started to pick up from February, 1994 and the upswing in prices continued well into the harvest months for aman in 1994/95. This upswing in prices not only heralded a dramatic recovery in prices, but effectively put the economy back on to a high price regime for rice with, of course, normal seasonal variations. It should be emphasized, however, that the recent upsurge in foodgrain imports, improved offtake and the

prospect of a good boro harvest exerted considerable downward pressure on rice prices since April, 1996.[6]

Agricultural Stagnation and its Implications for Poverty

One naturally wonders whether the recent slowdown in agricultural growth and the virtual stagnation in rice production have any implication for the incidence of poverty in the country. Since poverty is a multi-dimensional phenomenon, a direct causality is difficult to establish, although one would expect the deceleration in the growth of rice production to make a dent in the poverty profile through its impact on per capita foodgrain availability and rice prices. Despite some upswing in prices in 1994/95 and 1995/96, there has been a long term declining trend in real prices of rice in Bangladesh. This would appear to be consistent with the declining trend in the incidence of poverty (as estimated by BBS using HES data) over the 1973/74 - 1991/92 period. However, it should be emphasized here that while the extent of deprivation in Bangladesh makes it imperative to monitor its evolution, a concensus is yet to emerge on the trend in poverty since the early eighties. Secondly, even the BBS estimates of head count indices exhibit a slight increase in rural and urban poverty in 1991/92, as compared to that in 1988/89. However, whether this trend has been sustained in recent years remains to be seen.

Agricultural Growth and Stagnation: Small and Large Farms

The slowdown of irrigation through the closure of DTWs will equally affect both small and large farmers as both had benefitted by the expansion of irrigation. However, DTW irrigation may imply a greater access by large farmers because they usually influence the location of the sinking of DTW (even if these are under public ownership). In the case of private ownership, the huge investment required for DTWs implies that the small farmers are less likely to purchase it. In contrast, small farmers have a better prospect of having access to STW. Therefore, a replacement of DTWs by STWs may have adverse implications for the growth in the crop sector, but this will have a positive impact on equity.

Agricultural Growth and Stagnation: Implications for Agricultural Labour

Even if the impact of modern agricultural technology on total labour use is not large, the impact on the demand for hired labour increased significantly. The use of hired labour per hectare is about 68 per cent higher in the irrigated areas. The greater use of hired labour has been due to the larger labour input by big landowners in irrigated areas, compared to such farm sizes in non-irrigated areas. In most studies, the difference in the use of hired labour is larger than the difference in total labour use between irrigated and non-irrigated areas.

[6]In fact, the rice prices in April, May and June, 1996 were lower than the corresponding months in 1995 by 7.4, 9.9 and 8.0 per cent respectively.

Given the small impact on total labour demand, the impact of irrigated agriculture on employment per worker is not likely to be strong. One of the early studies observed a positive association between employment per worker/household and the extent of irrigation (Hossain, 1989). More recent data shows that irrigation does not have a significant impact on employment obtained by a worker (Rahman, 1995). Agricultural employment for wage labourers is higher in irrigated areas, whereas non-agricultural employment is lower. Thus the total employment remains more or less unaffected.

Cross sectional data on the impact of irrigation shows that a higher demand for hired labour is reflected in a rise in wage rate, at least seasonally. The difference in wage rate between irrigated and unirrigated areas ranges between 14 and 30 per cent.

An intertemporal comparison of absorption of labour force in agriculture may provide a better picture of the impact of agricultural growth. Data on the extent of employment generated in agriculture and non-agriculture, between 1984-85 and 1991 shows that labour absorption in agriculture increased between 1984-85 to 1990-91. A better idea about the absorption of labour in crop sector will be given by labour force engaged in the rural sector. In rural areas, the increase in labour employed in agriculture has been rather modest.

Impact of Policy Reforms: Efficiency of Resource Use

The impact of policy reforms encompassing both the macroeconomic policies as well as agricultural sector policies pertaining to markets for modern inputs such as HYV seeds, fertilizer, irrigation, and pricing for agricultural products have been analysed. Given the predominance of rice in crop agriculture, the impact of trade policy on agricultural incentives is largely determined by what happens in the case of rice. Since Bangladesh has been importing rice, though marginally in most years, the import parity price appears to be the relevant world reference price. The estimated nominal rate of protection at the official exchange rate (capturing the direct effects of trade and agricultural policies) has mostly been negative over the 1974/75 to 1995/96 period. Out of 22 years for which the nominal protection rates have been estimated, the estimates were negative in 17 years. The direct effect of trade and price policies, has been consistantly and significantly negative since 1986/87. When indirect effects of economy-wide exchange rate and trade policies are incorporated through estimation of border prices at the equilibrium exchange rate, this yields a much lower nominal protection rate due to overvaluation of currency. In fact, when NRP is computed using equilibrium exchange rate, the negative protection of rice in relation to import parity price persists throughout the entire period under review.

As observed earlier, Bangladesh has been a marginal importer of rice and hence this calls for estimation of nominal rate of protection with respect to export parity price as well since the

country could generate exportable surplus in bumper harvest years. A comparison of nominal rate of protection (at the official exchange rate) based on import and export parity prices indicates that the domestic prices have mostly remained within the band of these two sets of parity prices. This implies that in most years there has not been any positive or negative protection of rice through import or export taxation or trade restrictions. The trade policy, nevertheless, can be held responsible for lowering domestic price of rice through public import of foodgrains, mostly under food aid (Mahmud et al. 1993).

The foodgrain deficit has been largely met through import of wheat in the country. For wheat, therefore, import parity price represents the reference point for estimating the nominal rate of protection in order to assess the impact of trade and exchange rate policies. The NRP estimates indicate that the domestic price of wheat has mostly remained below the import parity price measured at the official exchange rate. In fact, out of 22 years for which the estimates are available, nominal protection rates were negative in 15 years and positive in 7 years. However, the pattern have not been uniform throughout the period. When the indirect effects of economy-wide exchange rate and trade policies are taken into account, nominal protection has been observed to be negative throughout the period of analysis (excepting 1974/75 and 1975/76). In fact, average nominal rates of protection (at equilibrium exchange rate) declined sharply from -27 per cent during the 1976/77 to 1984/85 period to -7 per cent during the second half of the eighties, but increased to -25 per cent in recent years (1990/91 - 1995/96).

To sum up, rice has been implicitly taxed throughout the period of analysis when import parity is taken as the reference point, and when indirect effects are taken into consideration. However, this implicit taxation has been considerably reduced in recent period, following the introduction of structural reform programmes. When export parity price is considered, then in most years, there has not been any positive or negative protection of rice through import/export taxation and/or trade restrictions. In other words, the trade and exchange rate policies have become neutral to determination of domestic rice prices.

For over a decade now, a wide range of policy reforms have been implemented in the agricultural sector including privatization of input distribution, withdrawal of input and food subsidy, import liberalization and a broadening of the scope of private investment in agriculture. However, although there has been extensive discussion on the impact of agricultural policy reforms, there is a dearth of empirical studies on the measurement of the impact of the policy reforms in Bangladesh agriculture. The impact of liberalization can be analyzed both in terms of its direct as well as indirect impact on the economy. Detailed calculations indicate that the budgetary subsidy on fertilizer amounted to Tk. 1,286 million in 1979/80, Tk. 1,426 million in 1983/84, Tk. 1,273 million in 1988/89, and only about Tk. 25 million in 1992/93. Thus, it is obvious that the budgetary savings arising from liberalization of fertilizer market is quite

significant. A comparable estimate of the subsidy for irrigation is not available. However, the budgetary subsidy on the low-lift and tube-well programme of BADC was estimated to be Tk. 1,035 million in 1979/80, and Tk. 830 million in 1983/84. By the middle of the eighties, almost the entire subsidy on low lift pump and tubewell irrigation of BADC has been eliminated (Ahmed, 1995).

Measurement of the direct impact of policy reforms is no less complex than indirect impact, largely because of the problem in deriving the counter-factual estimates of production and income without reforms that are necessary for comparison with the post-reform outcome. A recent study by Ahmed (1995) has attempted to measure the direct impact of input market reforms on the production of rice, using a multi-equation model in which a dummy variable distinguishes pre- and post-reform periods. The counter-factual results of this modelling exercise indicate that the reforms in the fertilizer and irrigation markets in Bangladesh can reasonably be credited with the growth in rice production during the 1986-92 period. The reform measures are estimated to contribute roughly 20 to 32 per cent of the increase in rice production over the period. This increase is primarily attributed to the impact of reforms on fertilizer use and minor irrigation development in the private sector.

Liberalization of markets at one shot (the so-called therapy approach) and liberalization in phases (the gradual approach) have been much debated in the literature as well as among the policy makers. If phasing is unavoidable, the question of what sequence should be followed become quite relevant. The experience in Bangladesh provides a lesson on this important issue. The successful one-shot approach has rarely been a real-world example, and sequencing of reform measures generally plays a strategic role in market liberalization (Ahmed, 1995).

The policy changes in the late eighties particularly regarding the removal of ban on private sector import of agricultural equipment and reduction in import duties have had positive impact on expansion of minor irrigation in the country. With removal of standardization requirements and unrestricted private sector imports, farmers realized lower prices for minor irrigation equipment by choosing the low-cost source (machines of Chinese and Indian make in place of Japanese and Korean) for pumps and motors, and using plastic pipes in place of metal pipes for installation of the equipment. By early 1989, the cost of installation of a shallow tubewell decreased to US $ 500-600, almost 40 per cent lower than the price offered by BADC before import liberalization (Guiseelquest, 1992). With the sharp reduction in prices, the medium, even the small farmers could afford to undertake the investment, which was financed mostly with own resources. Thus, abolition of standardization requirement and siting restrictions contributed to large scale expansion of private markets in irrigation services in Bangladesh.

Impact of Policy Reforms: Equity

The main concern for the development of a private sector water market was that the irrigation equipment would be concentrated in the hands of the higher income groups, which might lead to a differential pricing and inequitable access to irrigation against small and marginal farmers. Hussain (1996) presents the findings of two large-scale sample surveys conducted by BIDS covering the same households. The sample was drawn from 62 villages randomly selected through a multi-stage sampling method. The number of sample households were 1208 in 1987, which increased to 1293 in 1994. It has been observed that irrigation has increased substantially over 1987-94 period, more for the relatively large farmers than for the medium and small ones. The difference in access to irrigation between the small and the large farmers remained. The unit cost of irrigation for large farmer was only half of that for small and marginal farmers, and about 25 per cent lower than that for medium farmers. The inequity increased marginally over the 1987-94 period. The important point to note, however, is that during the period of large scale expansion of the private water market, irrigation charges paid by the farmers did not increase. The average water charge in fact declined by 4 per cent during this period; when the price of rice increased by roughly 30 per cent. Thus, in real terms, irrigation water has become substantially cheaper after liberalization of the water market.

STW and DTW ownership has not been monopolized by large farmers. All categories of farms have access to the ownership of these equipment and the highest percentage of owners comes not from the largest farm size but from among the medium farmers. Moreover, the small farmers' share in the ownership of STW and DTW increased over the 1982-1994 period, when the major privatization policies were implemented. These findings apparently suggest that the impact of privatization policies had not been grossly inequitable.

Privatization may have adverse distributional implications through higher water charges. Water charges for irrigation by DTW operated under three different modes of management show that the charge under NGO ownership (GKF) is the highest, followed by private ownership and charges by BWDB owned ones were the lowest. Some studies show that smaller farms pay a higher water charge, while others do not find such evidence. Thus there is no clear evidence that privatization led to adverse distributional implications.

Macro/Sectoral Policy Reforms and the Environment

Some of the major macro policy reforms in Bangladesh have both direct and indirect impacts on sustainable development issues. Generally, reform processes have mixed impacts on the environment, both positive and negative. Adverse impacts are generally better addressed through targeted environmental policies at the same time as macroeconomic fundamental policies are maintained. Hence, environmental policies can be used to correct economic externalities not

"internalized" in the economy, such as capturing the cost of industrial pollution (even as industry expands), or the cost of forest degradation (even as higher value-added in the forestry sector is being promoted).

In terms of the adjustment of relative prices in the economy, the removal of subsidies (e.g., energy, agricultural inputs, water, and timber) almost always favours -- unambiguously -- the environment. By increasing prices for resources and resource-based service closer to their real economic cost, greater efficiency in resource utilization is encouraged. This, in turn, has a positive impact on the sustainability of resource use. The opening of several sectors, such as water, energy, and solid waste, to increased private sector participation is often pre-conditioned on the pricing of services at non-subsidized rates.

Unfortunately, some of these price shifts may have negative social impacts, most often in the form of reduced services to the poor. Service impacts, at least in the short term, are common in the areas of water and energy services, and agricultural inputs, most reform processes do impose temporary hardship on segments of the population. It is appropriate to try and cushion these hardships through outside financing of transition costs, and through the creation of improved social safety nets.

Of course, the fundamental objective of macroeconomic reform is economic growth. The expansionary impacts of fiscal reform, tariff liberalization, reduction of real interest rates, export promotion, and privatization have potentially dual, even conflicting, impacts on the environment. On the positive side, there is the positive impact of greater efficiency in resource use, as mentioned. However, economic growth has clear negative impacts on the environment as well, primarily through the scale effect. Rapidly expanding industrial output increases the total volume of pollutants released into the environment. Industrial growth must be pursued in tandem with improved regulation of industrial pollution. Similarly, in the resource sectors such as fisheries and forestry, economic growth and the liberalization of tariffs will lead to expanded production. This expansion would lead to excess expansion of production beyond sustainable levels, unless counter-balanced by sector-specific environmental policies that include raising resource rents and encouraging the application of newer technologies and more sustainable methods in resource-based sectors.

To sum up , there are two main messages: first, negative environmental effects can (and often do) accompany sound macro and sectoral reforms, and second, that these negative effects are better addressed through mitigating environmental policies than through modification of sound macro and sectoral policies. Ultimately, economic efficiency is necessary for sustainability.

Policy Recommendations

In the light of the analysis and findings of this study, a set of specific policy recommendations is derived to promote sustainable and equitable growth of agriculture in the country.

- The poor financial performance of deep tubewells, particularly in comparison to shallow tubewells and low lift pumps, dictates that in areas where STWs can operate, a phasing out of DTWs might be encouraged. However, in areas where even deep set STWs cannot operate, there is a question of how to enable DTWs already installed to keep on functioning. It is necessary to devise alternative ways of making DTWs financially attractive to farmers in those areas. Such measures might include promotion of high value crops, increasing command area through the formation of irrigator's groups, and targeted subsidy on social equity grounds.

- Following the withdrawal of BADC from minor irrigation, a temporary vaccum has been created in the repair and maintenance of deep tubewells. In many areas, the private markets have not been able to provide adequately the support services for operation and maintenance of DTWs. An appropriate programme need to be put in place to provide support services (such as spare parts, mechanical workers, field equipment etc.) to keep these well operating until they reach the end of their lives.

- The government efforts for minor irrigation have emphasized mainly on hardware and little attention to the provision of support services. Even for the relatively thriving STWs, many support services are underdeveloped, (such as technical and aquifer information, mechanical training etc.) and credit is insufficiently accessible, both to farmer as well as equipment traders. A large number of minor irrigation equipment are underutilized and their overall water use efficiency is low. In this context, the government should now give more attention to providing effective support to on-farm water management, as well as operation and maintenance to enhance the economic returns from groundwater irrigation.

- In order to sustain the profitability of HYV boro cultivation using tubewell irrigation, it is necessary, among others, to ensure sustained increase in its yield. This would require continuous improvement in fertilizer uses, soil management, agronomic practices and plant protection measures. From the entrepreneurial point of view, tubewell owners/managers would need to improve their efficiency pertaining to on-farm water management in a competitive but regulated environment, so that command area per machine is increased and cost of supplying water per unit of land reduced. Another possible area of government policy intervention is to promote electrification of tubewells with uninterrupted/regular power supplies so that operation and maintenance costs are reduced.

- Public procurement of foodgrains during the harvest months has been construed as price support policy to provide incentives for increasing foodgrain production in the country. However, a careful analysis of the grower's and procurement price shows that the government intervention in the form of domestic procurement have largely failed in maintaining effective floor prices and therefore, ensuring incentive prices to farmers. The government, therefore, needs to devise appropriate measures to make domestic procurement programme more effective in order to provide price support and thereby sustain production incentives to the farmers, specially in the face of rising costs of production following the removal of explicit subsidies. Domestic procurement of grains through open tendering represents a cost-effective way of public grain procurement and providing price support to the farmers during the harvest period. One can also think of a trade-based machanism for price stabilization which would rely on private sector trade and a public sector export/import stabilization fund to subsidize/tax trade as necessary to keep domestic prices within acceptable limits. While the private sector import of grains has increased, an effective mechanism for price stabilization is yet to be developed.

- The fertilizer crisis in 1995 clearly points to the need of a government role in the marketing of fertilizer. However, the crisis does not necessarily mean that one should revert to the old model of public marketing. It seems that even though the market has been operating competitively at the retail and wholesale levels, the supply from factory gates has all along been a reflection of oligopolistic structure and behaviour. Unless it is possible to introduce competition at this apex level, any distortion at the apex level will spread rapidly through the whole system.

- The issue prices of urea and TSP fertilizer produced domestically are below the costs of production and export parity for urea and import parity for TSP indicating implicit subsidy on domestically produced fertilizer while no such subsidy is provided to imported fertilizer. As a result, the price of phosphate and potash fertilizer (which are mostly imported) have considerably increased following the removal of explicit subsidy and privatization of fertilizer trade. This has aggravated the imbalanced use of fertilizer (excessive use of urea) with adverse effect on soil fertility and crop productivity. It is, therefore, necessary to take appropriate measures to maintain a balance in the relative price ratio of both imported and domestically produced fertilizer. Factory gate pricing of urea assumes a critical significance in this context. The present urea price policy is not only inconsistent with general orientation with trade and exchange rate liberalization but has caused wide divergence between domestic market price and border price, and is costly to maintain, and encourages smuggling outside the country. Moreover, the artificially low price may not be benefitting farmers as it gives rise to scarcity and rent seeking by those with access to rationed supply.

- Various studies indicate that there exists wide gap between potential and realized yields for all major crops in Bangladesh. Considerable potential for enhanced crop production, therefore, exists by narrowing the yield gap through more effective research-extension linkage in the country.

- The issue of environmental sustainability of agricultural development is important for Bangladesh. Signs of land degradation resulting from cropping and soil management are already noticeable. Part of the problems is attributed to removal of nutrients and its uneven replenishment due to increased application of fertilizer without taking into account the soil characteristics. While there is no alternative to intensive production strategy to accelerate crop production through expansion of minor irrigation, HYV seeds with complementary use of pesticides and higher doses of chemical fertilizer, its implications for environment should also be considered. This would require adoption of environment-friendly technology and practices as well as measures to prevent and mitigate adverse environmental effects.

- Successful environmental management can be achieved by upgrading the technical skills and environmental awareness of government staff. In order to achieve policy reforms favouring greater environmental sustainability, it is important to: (i) increase the number of Government staff in sectoral agencies who are trained to understand the extent and costs of negative policy impacts on the environment; (ii) increase the number of Government staff trained to handle specific technical environment matters at different institutional levels, and (iii) increase public awareness of environmental issues and options. These aspects are crucial -- to build an environmental constituency as well as to build up the professional capacity to address environmental concerns.

- When considering the adverse environmental impacts of macroeconomic and sectoral policies, reversing any conflicts between existing policies and environmental objectives should be considered as the highest environmental policy priority. To fill in the key gaps in sectoral policies, with complementary and efficient environmental policies, is the second environmental policy priority.

2.4.1.3 Public Expenditure and Social Development in Bangladesh

Poverty connotes "a deprivation in relation to social standard, or lack of minimum entitlements of households in society". It is the sustained inability of a household to meet its minimum basic needs and is a direct consequence of inequitable access to basic services, productive assets and economic opportunities. Poverty is not created by the poor themselves nor is it sustained by them. It has its roots in social and economic system which has very little or ineffective

programmes to alleviate it. Poverty by its very nature, cannot be eliminated with ad-hoc measures, one must look for long term economic measures when addressing the problem. Bangladesh, with a per capita income of US$ 273 in 1996, is one of the poorest countries of the world. Low income, coupled with its unequal distribution, has resulted in high incidence of poverty. About half of the population are estimated to suffer from abject poverty. The severity of poverty also varies in the context of geographic location, seasonal and natural factors and man made calamities and, within households, the burden of poverty falls disproportionately on the female members and the younger children.

It is argued that poverty is essentially a problem of market failure. Hence, the problem of eradicating poverty falls in the realm of public policy. But in a world committed to the process of globalization, the role of the government is expected to shrink. Bangladesh is no exception. Its economy has increasingly become market oriented and dominated by the private sector by early 1990s compared to that in early 1970s when it was primarily a centrally controlled economy dominated by the public sector. Yet, the share of public expenditure in GDP, an indicator of the influence of the State in the overall economy, has in general been increasing. In other words, though direct intervention by the government and its share in the ownership of the means of production has decreased dramatically, the use of resources by the government has nonetheless increased. Thus, the government's ability to use resources according to non-market criteria has not been hindered by the adoption of market oriented economic policies. In fact, it is found that the share of expenditure that is expected to have favourable impact on poverty reduction has been going up while the overall share of public expenditure in GDP has also been rising since the early 1980s. That is, absolute expenditure on areas that favours reduction of poverty has been rising rapidly. However, empirical findings on the incidence of poverty do not indicate any substantial success in reducing poverty.

The planning and budgeting in Bangladesh are undertaken by the Planning Commission under the Ministry of Planning and by the Ministry of Finance. The budget is head based. The revenue and development budgets for a particular sector are physically separated. Moreover, the sector classifications are not themselves always common. The development budget is merely one of a series of overlapping documents in different formats: Annual Development Programme (ADP), three year rolling investment programme, summary of the development budget, and the detailed budget. These documents are not integrated. There is a multiplicity of sectors/bodies involved in the production of the ADP.

The non development budget prepared by the Ministry of Finance, and the ADP, prepared by the Planning Commission, are parallel tasks. The ADP prepared by the Planning Commission is translated into a Demand for Grants by the Ministry of Finance. There are inconsistencies between the ADP and the development budget that is produced from it, together with confusion

over definitions of revenue and capital costs under the development budget. Despite the ADP being sector based and the development budget being head based, these two documents are largely a duplication of efforts. More importantly, the expenditure categorization does not conform to standard international classifications. For example, the revenue capital categorization tends to get confused between non-development and development categorization yielding distorted picture about the nature of public expenditure and its impact on the economy. It would be more meaningful if the budget could be redefined to exclude recurrent costs in ADP while categorizing development expenditures and including from the non-development budget non-wage O&M as also the recurrent expenditures on social sectors such as health, education, family planning etc. Thus, to make any meaningful analysis of the impact of public expenditure in Bangladesh the existing data set need to be reorganized.

As in many developing countries, the experience of the central government in Bangladesh in using national resources effectively for development purposes has not been encouraging. It has become increasingly clear that the participation of the beneficiaries at various stages of project implementation is essential for ensuring that benefits of the poverty alleviating projects are reaped primarily by the target groups and are sustained. Community participation can be institutionalized through broadened community organizations. This is usually the missing link between the providers (the government) and the people, that is the delivery mechanisms and the beneficiaries. It is this institutional vacuum at the local level that primarily leads to the diversion of resources meant for the poor when it is delivered through the government agents controlled primarily from the centre as it cannot communicate with the unorganized poor. It is argued that local level bodies being closer to the people, are in a better position to foster participatory mode of development. Bangladesh has a long history of local level institutions. But the procedures through which decisions about fiscal rights and spending responsibilities of these institutions have been established meant that they were nothing more than an expanded arm of the central government. The recent trend is to elect the representatives at the local levels increasingly through direct elections. In other words, the vacuum in political leadership at the local level is being gradually filled up.

The development of the local government in this country brings in the concept of "devolution" vis-a-vis “deconcentration" of decision making power into sharp focus. The history of the development of local level institutions in Bangladesh reveals that there has been frequent changes in the tiers and importance of various levels of local level institutions in the overall system. Since independence of the country, changes in the government have been followed by changes in various aspects of the local level bodies. These changes included such fundamental aspects as the representative nature of the system. During different regimes, alternative levels of government were identified as the focal points of the system. Attaching such importance to any level of the government defeats the very purpose of having independent tiers of the government

bodies. Changes in the functions and responsibilities at various levels along with powers to raise revenues were also enacted. All these changes were introduced by enacting laws in a very arbitrary manner. Very little, if any, justifications were ever provided for making such sweeping changes. Recently, the government has passed a bill to establish four tiers of local government institutions at the village, union, upazilla and zila levels. Each of the local levels would have well-defined functions and the office bearers would be elected directly. Thus, elected representatives would be able to address the problems of local leadership over time as they gain experience in running the affairs of the local bodies they are elected of. The experience in Bangladesh, however, shows that the local bodies in the past were assigned to carry out various functions and responsibilities. In reality, only a few basic functions were, in general, carried out due to paucity of manpower and, most importantly, finance. If the local authority does not have any fiscal independence, then there would be no point in having any kind of politically elected local authority. In such circumstances, by definition the elected representatives would have no effective power and the local bodies would remain as an extended arm of the central government.

Local governments, since their inception, have never been able to finance themselves from locally raised resources. The revenue generated by the local governments in Bangladesh is less than 3 per cent of total tax revenues compared to 20 per cent in India and 14 per cent in Sri Lanka. Union Parishads had to depend on government grants even when they were empowered to collect revenues from 14 items according to Basic Democracy Act, 1959. One survey showed that Union Parishads could collect taxes from 3 to 4 sources in 1976 though they could have raised taxes from 14 items. According to the survey, the Union Parishads became financially so weak after restricting their power to raise taxes from 28 to 6 (1976 Ordinance) in 1976 that they could not even meet the expenses on account of salaries of their employees. A sample survey showed that the magnitude of taxes, lease money, tolls, fees etc. collected by the Upazila Parishads never exceeded 5 per cent of the total receipts of Upazila Parishads in any year since 1982-83, i.e., the year they were created. The UZPs and the UPs could hardly contribute to development activities from their own incomes. Thus it appears that the local bodies are overwhelmingly dependent on the central government for running their affairs.

If the local authority has no fiscal independence and no authority over the types and levels of local services to be delivered, then the local authorities would become simply an administrative arm of the central government financed by the central government and required to carry out the specific functions designated by the central government. It does not make any difference, in such circumstances, whether the local level officials are elected or not. On the other hand, absolute autonomy of the local bodies over their own tax and expenditure policies is also not feasible. For example, if both the central and the local authorities levy an income tax, both the total burden and the marginal rates would be the outcome of their independent policies, and

marginal tax rates of more than 100 per cent would become plausible. Thus, complete independence in revenue raising is also not a practical possibility, particularly in the case of unitary states. Thus, both the polar cases are not realistic solutions for functioning of autonomous local level institutions. In reality, there would be conflicting views regarding the revenue raising potential of the taxes the central government is willing to cede to local authorities, and the cost of delivering the services that the central government postulates that the local authorities should provide.

In fact, the procedures through which decisions about fiscal rights and spending responsibilities are established is crucial for establishing an appropriate relationship between the centre and the local bodies that is neither hierarchical nor totally independent but mutually reinforcing for effective utilization of national resources. In other words, a participatory mode of development would suggest that the representatives of the local bodies should have a say in such a decision making process. However, given the experience of local bodies in Bangladesh it is apparent that grants-in-aid will remain a part of the central/local financing arrangements for quite some time into the future. Then the important question would be how to determine the size of the grant to the local bodies.

The local bodies in Bangladesh are provided with a general grant based on certain criteria such as size of the population and per capita income. The expenditure pattern (i.e. the share of expenditure to different services) is also mostly fixed. Thus the general grant, as is provided to the local bodies in Bangladesh, augment resources for providing services as delineated by the central government. In this case, the local bodies neither have the autonomy to decide what services to generate nor do they have the resources to provide the services they would like to provide. The size of the grant is determined by some measures of need (for example, size of the population or per capita income) or fiscal capacity. On the other hand, grants can be made conditional whose purpose is to stimulate the local activities or provision of services which are considered desirable. Thus, expenditures, which contribute towards reducing poverty, would be encouraged. Hence, central government expenditures on social sectors and anti-poverty programmes may be channeled through the local bodies on the condition that they would match such grants from the central government by expenditures from their own resources. This will stimulate expenditures in sectors which directly and/or indirectly contribute towards reducing poverty. The general grant provides local authorities with additional resources, but gives them autonomy in service provision within the general framework of their legal obligations, since qualification for grant does not depend upon the delivery of any specific service. Conditional grants, in contrast, take the form of a payment towards the cost of providing a particular local service. As a consequence, unlike the general grant, conditional grants alter the opportunity costs of local authorities. For example, when the government provides a matching grant to the local body for providing a service (for example, education) then it acts as an incentive for the

local bodies to spend more on that service either by reducing expenditure elsewhere, or by raising more revenues. Thus, not only more resources are made available for delivering the desirable services but the possibility of such resources being more effectively used is enhanced as it is implemented by local level institutions which have more intimate relationship with the local people.

2.4.1.4 Structural Adjustment Policies and Labour Market in Bangladesh

Slow economic growth, high and variable inflation rate, expanding fiscal deficit, unsustainable balance of payments and other structural weaknesses of the economy motivated Bangladesh to revise its policy regime within the framework of IMF and World Bank stabilization and structural adjustment programmes. The programmes implemented since 1987 mark a clear departure from the previous policy regime and involve wide ranging changes in policies covering every major sphere of the economy. The broad areas of reform include trade liberalization, privatization of state owned enterprises, reduction in public consumption, increased domestic resource mobilization, withdrawal of subsidies on food grains and agricultural inputs, financial sector reforms and pro-private investment policy. Such changes in policy was to be ensured by financial support from the Fund and the Bank.

The policies envisage a market oriented export led growth strategy involving reallocation of resources to the tradable goods and services sector to ensure greater efficiency in resource use. The success of structural adjustment policies in achieving desirable macroeconomic equilibrium characterized by higher growth, stable prices and sustainable balance of payments depends to a significant extent on the behaviour of the labour market. The impact of these policies is transmitted to different groups of people through the labour market.

The impact of structural adjustment (SA) policies on macroeconomic performance in Bangladesh varied over time and across sectors. Several macroeconomic indicators stagnated or worsened in the initial years of the adjustment period which raised serious concerns about the SA policies. Growth rate declined, domestic savings rate fell, revenue/GDP ratio stumbled, trade and current account deficit expanded and investment rate stagnated. The only area where some success was registered in the early years related to inflation control - inflation rate declined with SA policies. It is not clear, however, how much of this lack lustre performance owed to the policy shock and how much to the random shock caused by devastating floods in 1988 and 1989. The poor economic performance in 1991 was largely a result of the political upheaval in the country.

The macroeconomic performance of the economy started to improve in 1992 and gradually gained momentum as the decade proceeded. Growth rate improved, both domestic savings and investment rate increased, revenue/GDP ratio increased, rate of growth of exports escalated and trade and current account deficit declined. Judged by the trend growth rates, some of the macro-indicators, however, do not reveal any discernible trend.

The labour market is characterized by high rate of labour force growth (8 percent per annum), low employment growth rate (about 3 percent) and reduced labour absorption in manufacturing sector(-7 percent per annum over 1989-96). Agriculture is still the major sector providing employment (63 percent in 1996) followed by services sector (27 percent in 1996). The labour market also shows high underemployment rate (39.2 percent in 1996), dominant rural share (82 percent) and smaller share of women employment (33.02 in rural and 5.04 percent in urban areas).

The movement of real wages exhibits a slight upward trend (general as well as sectoral wages) with year-to-year fluctuations around the trend. The behaviour of real wages which shows some measure of downward stickiness reflects the wage setting and wage adjustment mechanisms operating in the economy. The rise in real wage in the face of increasing unemployment and somewhat declining labour productivity implies something less than a well functioning labour market. The opposite side of the story however, is that labour has not suffered wage declines because of the stabilization and structural adjustment programmes.

Unemployment rate shows a creeping rise in the adjustment period. The pattern of employment has undergone some changes in the adjustment period. The share of agricultural employment has declined as Lewis would have predicted. But the slack has not been taken up by manufacturing employment which has also suffered a decline. Instead the share of non-tradables sector employment has registered an increase. These changes in the employment patterns are consistent with changes in composition of gross domestic product which shows rising share of non-tradable sectors.

Educated unemployment situation has worsened in the adjustment period both in relative and absolute terms. The mismatch between demand for and supply of educated labour is an outcome of the forces operating on both sides of the market. The educational institutions turn out graduates with inappropriate skills and in inordinate quantities. Aspiration for good jobs ensuring exalted position in the society leads the students to crowd the academic institutions. Besides, `luxury unemployment' phenomenon and slower expansion of public sector jobs may also be responsible for this phenomenon.

Growing informalization of labour has been observed in some countries undertaking structural adjustment programmes. Such trends could not be confirmed in Bangladesh because of lack of time series data. Available data suggest that 87 percent of the labour are engaged in the informal labour market. Informal labour market dominates almost all major sectors of the economy. Even in the manufacturing sector informal employment share is as high as 51.5 percent. There seem to have been some changes in the structural characteristics of the urban informal labour market in Dhaka city. These changes mainly relate to the type of activities, the mode of skill acquisition and the length of stay in the city.

The low rate of unemployment at the macro level does not reveal the full dimension of the employment problem. Several micro studies suggest the existence of much higher level of unemployment, and high rate of underemployment and disguised unemployment in the economy, particularly in agriculture.

Increasing participation of women in the labour force as well as an increase in the share of women employment have been observed in the adjustment period. Women unemployment rate which was above that of male in the pre-adjustment period fell below male unemployment rate in the adjustment period. There exists spatial difference between the unemployment rates. Thus while women unemployment rate in the rural areas underwent both absolute and relative declines, in the urban areas it rose in both absolute and relative terms. Employment opportunities for women seem to be concentrated in a few sectors like manufacturing, community and personal services and agriculture outside the traditional household sector.

There exists annual variation in the distribution of income depending, among other things, on the occurrence of natural disasters. But judging by two end points of the study income distribution has deteriorated between 1984 and 1996. The bottom 40 percent of the income group has lost with the gains accruing to all other groups, the upper middle 20 percent gaining the most. The concentration of income has increased in the adjustment period; the Gini concentration ratio has increased from 0.36 in 1984 to 0.39 in 1992.

The incidence of poverty as measured by head-count index, poverty gap index and squared poverty gap index has decreased though there exists annual variation in the progress of poverty reduction. There are also spatial differences in the extent of poverty reduction with greater success observed in urban poverty reduction up to 1992. In more recent years the incidence of poverty in urban areas seems to have increased. The modest to imperceptible gains in poverty reduction in the face of rising unemployment can be attributed to the growth of income, provision of direct development assistance to the poor and provision of social safety nets.

Investment rate has not shown any significant response, positive or negative, to the structural adjustment programmes in the 1980s. Investment rate, however, accelerated in the 1990s. Estimates of private investment on education are not available. But rapid expansion of expensive private education system especially at the primary and the university level is suggestive of an increase in private investment in education. Public allocation for education has increased over the years reflecting growing emphasis on human resource development. The expansion of the public education system has not kept pace with the demand for education resulting in rationing of available capacities in academic institutions of certain recognized quality. However, there is a concern over the deteriorating quality of the students graduating from academic institutions stricken by political violence, session jams and general apathy to serious learning.

There is a long tradition of government intervention in trade union activities and settlement of wages of workers in Bangladesh. The massive nationalization programme undertaken immediately after liberation led to enhancement of government's role in those arenas and to mushroom growth of labour unions and federations having affiliation with different political parties. Public sector enterprises dominate the manufacturing sector. Managers of public sector enterprises do not have the autonomy with respect to wage determination. Though not legally recognized, wages in public sector enterprises were, in practice, settled through centralized bargaining between government and leaders of the workers.

The politicization of trade unions, their multiplicity at the enterprise level and presence of outsiders among labour leadership led to frequent and intensive labour disputes and failure to honour terms and conditions of agreements. Such disputes constitute a major cause of low productivity of labour in the industrial sector. The agencies in charge of maintaining good industrial relation and resolving industrial disputes do not have adequate facilities, information as well as competence to tackle the problems.

Privatization of public sector enterprises, it was expected, would lead to reduction of the degree of politicization of labour unions, help to ensure industrial peace and bring wage in line with productivity of labour. The basis of this expectation had been the view that wages in public sector would rise at a proportionately higher rate than labour productivity or even when labour productivity declines or stagnates. It was also held that change in public sector wages might lead to change in wages in private sector independent of the prevailing productivity situation. Furthermore such a programme would subsequently pave the way for decentralized bargaining which has the potential for linking wage in an industry or a firm with industry-specific or firm-specific labour productivity. Surplus labour in different public

enterprises was estimated and labour retrenchment programme was executed for jute and cotton textiles, railway and Bangladesh Agricultural Development Corporation. Retrenchment of redundant labour in public sector was expected to help facilitate privatization. But Bangladesh experience in these areas seems to have been frustrating in many cases.

The expected positive impact of trade unions on employment seems to have been somewhat dampened during the adjustment period. In addition, as is widely held, public sector enterprises are found to have poor link between wage and labour productivity. Public sector wages are found to have risen even when the public sector enterprises have been persistently incurring losses. The hypothesis that public sector wages lead to changes in private sector wages is validated only in a few cases.

As privatization and retrenchment programmes were launched, there followed an interaction between programmes themselves and labour market institutions especially trade unions.A national alliance of trade union federations came into being.The labour fronts of political parties held the interest of the labour class above the interest of the political parties with which they were affiliated. Pace of privatization slowed and government had to change decisions regarding amount of compensation payable to labour and modes of privatization. Tripartite wage settlement procedure was virtually replaced by a bilateral procedure while employers were left out in the process.

In Bangladesh the issue of rehabilitation of displaced workers was not given proper weight at the beginning. Generous separation benefits awarded to retrenched workers in the recent past render rationalization of manpower in public sector enterprises, especially those with strong unions, a formidable task. Bangladesh lacks adequate and useful training facilities to train the huge number of displaced workers.

The introduction of decentralized bargaining to increase efficiency requires certain conditions to be fulfilled. Managers of public sector enterprises should have autonomy with respect to employment and wage settlement in the pursuance of profit maximization goal. The enterprise should face domestic and international competition on the product market. Even if these conditions, which are to some extent found to be lacking at present, are fulfilled there is concern about the ability of plant level workers' unions to effectively bargain with employers. The Sramik Karmachari Oikya Parishad (SKOP), a loose confederation of several national labour federation, may play a role in ensuring security and supplying information to unions and coordinating bargaining activities. It may also play a role, along with employers and the government in formulating wage, labour and industrial policies.

Despite the fact that movement of wages in the manufacturing sector does not truly reflect productivity, such wages are too low for workers to maintain ability to work and acquire skills. Creation of an environment congenial to investment and transfer of new technologies may raise the productivity of labour and hence wage. But those, in their turn, also require good industrial relation and a pro-work culture. However, development of an appropriate regulatory role of government and infrastructure may contribute significantly to creation of such an environment even under existing conditions.

2.4.1.5 Macroeconomic Adjustment Policies and Natural Resources and the Environment in the Rural Areas: Impact Assessment at the Micro-level

In enhancing human welfare, the environment plays a dual role: it provides resources and acts as a sink for absorbing the residues of production and consumption activities. Overexploitation of natural resources in the quest for higher production and meeting human needs results in environmental degradation with adverse impact on production particularly of the poor. Lack of markets mechanisms and/or efficient monitoring mechanisms for many environmental services and disposal of pollution exceeding absorptive capacity of the earth create ‘externalities’ leading to such degradation. Environment degradation can take various forms: soil erosion, depletion of soil nutrients, water logging, salinisation, shortage of irrigation water, contamination of ground or surface water, deforestation and degradation of forests, reduction in the fish population due to over harvesting and fish contamination, urban congestion and pollution, among others. Sustainable development is not just economic growth, it is about a commitment improvement in the quality of life for the people and the communities. This requires attention to ecological sustainability as well. Sustainable development can thus be defined as development that improves the total quality of life in a way that maintains the ecological processes on which life depends.

Since the past decade, policymakers have undertaken measures to ensure sustainability and holistic growth. The policy reforms and institution-building measures aim to enhance the integration of environmental concern into economic decision making for providing adequate priority to environmental issues in the development process. Such efforts, however, have tended to rely more on regulatory and administrative approaches which entail high administrative costs with low economic efficiency. The costs of the externalities from the activities that cause the degradation are not taken adequately into account under the approach. Sectoral development policies, however, failed to address environmental effects and externalities owing to complexity of factors and causalities. A comprehensive poverty reduction efforts in Bangladesh requires an adequate understanding of the interrelated issues

to provide viable alternatives to the government to decide on policies and actions for interventions.

The present study aims to identify the impact of poverty on environment and sustainable rural development in Bangladesh, and investigate the interrelation between poverty correlates and the state of the environment through appropriate indicators and methodologies. On the basis of the study, guidelines for the formulation of environmentally sound and sustainable rural development policies and programmes have been recommended.

The major objective of the study was to enhance the sustainability of rural development and rural poverty alleviation efforts in Bangladesh. Specifically, it was envisaged to: (i) provide insights and inputs to the policymakers and rural development practitioners on the ecological and social impacts of human activities in the rural areas through

- identifying the interrelationships between poverty correlates and the state of the environment;
- determining the major factors in environmental degradation and demonstrate the patterns of such degradation in recent years;
- identifying the major channels through which macroeconomic and sectoral / microeconomic policies create impact on the environment and suggest measures to magnify the positive impact of such policies; and
- suggesting appropriate indicators and methodologies for ascertaining poverty-environment linkages. and

(ii) help rural development planners and practitioners formulate environmentally sound and sustainable rural development policies and programmes.

The study was based on primary data collected through a sample survey to bring out the relevant issues covering 20 villages from 18 districts of 9 broadly classified AEZ, namely, (i) Hill area; (ii) River plain area; (iii) River char area; (iv) Peat area; (v) Haor/beel area; (vi) Coastal char land; (vii) Barind area; (viii) Terrace; and (ix) Sundar ban area. While selecting the sample areas, major characteristics addressed were: Relative poverty of the area, physical characteristics, soil type, transport network, suitability of agriculture, availability of fishery resources and cyclone risk. Before selecting the sample villages, relevant information was collected from the secondary sources and some other preliminary exercises were undertaken.

Environmental degradation takes manifest in myriad forms. Soil fertility may decline over time. Three types of soil degradation are common: desertification, erosion of soil and salinisation. Desertification is a result of loss in vegetative cover, exposure of the soil to wind

and water erosion, and deterioration in soil structure reducing its capacity to retain water. This may result from frequent and prolonged droughts, but man-made factors such as deforestation, overgrazing and over cultivation of marginal lands also contribute to these developments. Desertification also occurs in the drought-prone areas due to the decline in the water-table. The off-site effects of soil erosion include deposition of silt in dams, irrigation systems and consequent adverse impact on fisheries.

Problems of salinisation and water-logging, which reduce land productivity, result from bad irrigation practices. Deforestation causes loss of land productivity, loss of biodiversity, alters the local hydrological cycles by increasing run-off and affecting rainfall, and leads to scarcity of energy supply for the poor. Biological diversity provides material wealth in the form of food, fibre, medicine and industrial inputs besides having ecological value. In Bangladesh, with the decline of forests, transformation of inland water bodies and degradation of other natural habitat, many species of wild-life, birds and aquatic life have become extinct. Water scarcity is becoming an increasingly serious problem due to the indiscriminate use of ground water. More ground water is withdrawn from the aquifers than the natural recharge annually. Water pollution is also a major problem. This not only causes various diseases but also harms aquatic life resulting in reduced availability of fishes. There exist various sources of water contamination. Storm water run-offs carry chemical fertilizers, pesticides and herbicides and animal waste matters into water bodies in the rural areas. Rivers flowing through urban areas are polluted by discharge of industrial effluent and sewage. Ground water is contaminated through seepage of chemical agricultural inputs and improper disposal of heavy metals, synthetic chemicals and other toxic wastes of industry. In coastal areas, overpumping for irrigation causes infiltration of saline water into fresh water aquifers. Nitrogenous and phosphatic fertilizer have been the principal causes of contamination of surface and ground water. There has been an increase in nitrate concentration in ground water and entrophication of surface water bodies, especially in the ponded environments. The irrigated zones are the worst affected. Non-standardization of agrochemical at farm level gives rise to frequent incidence of causalities to both human and aquatic populations. This adversely affects fish culture in open water bodies and in rice fields.

Air pollution is a major problem in the urban areas resulting primarily from energy use, vehicular emissions, and industrial production. The rural poor also suffer from it because they rely heavily on biomass fuels which emit smoke that contain levels of suspended matter exceeding safe levels. The combination of inefficient stoves, absence of chimneys and poor ventilation leads to indoor air pollution which has adverse effects on the health of the rural population, particularly women and children.

Economic policies play a significant role in influencing the rate of depletion of natural resources and the level of environmental degradation. Although environmental problems are directly and indirectly linked with poverty, major causes of environmental degradation are embedded in the national environmental policies or lack thereof, the natural resources management system mechanisms and the socio-economic structure. The management of common property resources is critical in this regard. Similarly, land reform, land redistribution, input delivery systems, construction of community services and similar policies are instrumental in removing institutional constraints that prevent or reduce access of the rural poor to natural resources. In order to remove constraints due to demographic factors, investment in human resource development e.g. education and skill training programmes for the poor, special credit programmes, targeted nutrition programmes, agricultural price support policies and development of physical infrastructure are important. These policies help lift the poor from total dependence on their immediate microenvironment and natural resources and thereby reduce environmental degradation.

As the population continues to increase, it creates additional pressure on land and natural resources for meeting the enhanced needs for food, housing, clothing, sanitation, education and other amenities of life. A rapid population growth also hastens the pace of urbanization. Both push and pull factors accelerate the urbanization process causing degradation of the physical environment in urban areas. High population growth also leads to a faster conversion of land to agricultural uses, putting additional pressure on land and natural habitats. Agricultural intensification can avoid environmental degradation and public policy can play an important role in this regard by measures to discourage over-use of fertilizer, pesticides and irrigation for enhancing productivity.

Economic reforms and structural adjustment policies have placed the poor, especially the `hard core' poor, in a vulnerable situation since they are constrained to participate in the market with little asset to manifest their purchasing power. Liberalized trade and investment policies may also create adverse environmental effects. For instance, encouragement to shrimp cultivation for exports in Bangladesh, despite the creation of employment opportunities, has threatened crop production, availability of fish and ecological balance in the coastal areas due to preservation of saline water in the arable lands. For devising appropriate policies, it is important to incorporate environmental considerations into the macroeconomic and sectoral policy making process.

In the case of agriculture, land augmenting technological change e.g. the use of irrigation water and the application of seed-fertiliser technology would continue to remain as the important source of growth. The excessive use of water and chemical inputs, however, has been emerging as a serious problem. Efforts of research, training and extension in several areas e.g.

development and use of biotechnology, improvements in the quality of livestock and adoption of appropriate management practices deserve priority. The involvement of the rural poor in watershed development and management of common property resources can be made effective as a means of conserving the rural resources. The rural women, in general, can emerge as effective agents of conservation due to their substantial practical knowledge about the plant species, their uses and conservation techniques. They are also better conservators since women are mostly responsible for a large share of household income and subsistence needs e.g. food production as well as fodder, fuelwood and water collection and then, the adverse impact of natural resources degradation is largely borne by them in poor households.

Natural disasters create a profound impact on rural life through destruction of crops, livestock, shelter and other components of the village environment and through the forced dislocation of households and communities. Bangladesh are prone to major natural disasters e.g. floods, tropical storms and cyclones. The frequent flooding of the country's shallow and riverine landmass results in contamination of drinking water supplies and the outbreak of diarrhoeal diseases. The housing stock, livestock, and other major assets in the rural areas also remain highly vulnerable to damage and destruction by storms and flooding imposing a major constraint in developing the resource base in the rural areas.

Policy Implications

Economic reforms and structural adjustment policies in Bangladesh have placed the poor, especially the 'hard core' poor, in a vulnerable situation since they are constrained to participate in the market with little assets. Liberalised trade and investment policies also create adverse environmental effects. For devising appropriate policies, it is important to incorporate environmental considerations into macroeconomic and sectoral policymaking.

Efficient management of natural and environmental resources depends largely on ownership rights and related policies. In general, open access resources (e.g. resources under community ownership) are susceptible to over-exploitation and unsustainable uses. Private resources are efficiently managed if no externalities exist and ownership rights are well defined. Fisheries and water resources in Bangladesh provide a prime example of unsustainable exploitation of open access resource with large inter-sectoral externalities. It is, therefore, necessary to devise appropriate policies to regulate access, withdrawal and use of natural and environmental resources. For instance, the conservation of natural resources and bio-diversity requires priority in national planning. The success of conservation and protection measures will play an important role in determining the further ecological integrity of the natural environment of the country. To this end, the explicit integration of environmental concerns into economic growth policies is paramount.

Natural resource and environmental conservation in Bangladesh has significant cultural dimensions. The past experience of environmental interventions exhibits significant class dimensions as well: the poor bear a disproportionate burden in environment degradation compared to the well off. It is often found that environmental intervention also have a gender dimension. Women are hurt more than men. It is evident, therefore that the management of the environment has to take into consideration a number of issues including attitudes, beliefs, values and ideas of concerned communities since environmental problems often originate from human ideas and values at the local level. The conservation policies should be based on a proper appreciation of social implications of proposed polices and actions. It is important, therefore, to assess the contents, extent and magnitude of specific natural resource and environmental concern from a societal point of view to suggest policy options and disseminate information. Simultaneously, the incorporation of concerned communities in the project identification, formulation and management is necessary to adopt viable and location specific environmental action programmes.

In order to meet the challenges, the production potential of the economy, particularly of agriculture, needs to be optimally explored. Land, soil, climate and water are the key physical resources that determine the opportunities for agriculture. The maximisation of production and the achievement of sustainable output make it necessary to maintain environmental and ecological balance for sustaining the level of production. In order to ensure sustainability, planning and implementation of integrated resource management are crucial. In such programmes, the focus needs to be on the water cycle, watershed and related ecosystems since they are closely linked to several environment related issues e.g. deforestation, agricultural production, fisheries production and pollution. Such programmes should take advantage of the inter-agro-ecological linkages and dynamism, focussing on preservation of wetlands, community forestry and protection of forest reserves, crop diversification, integrated pest management and water supply-sanitation issues. In appropriate cases, measures should be initiated which focus on rehabilitation of the environmental damages that have already taken place.

While awareness of environmental concerns in development efforts is an essential prerequisite in promoting sustainable development, effective environmental impact assessment should be made an essential component of development planning and implementation process. National income accounting has, to a large extent, taken economic accounting of resources issues without due attention to the social, local and inter-sectoral issues. Thus, towards the formulation of a comprehensive environmental and growth plan, an exhaustive inventory of the biological and natural resources of the country is desired. Case studies on relevant local and sectoral issues and understanding of the costs and benefits of

policy alternatives should also be done to have a proper understanding of their economic, social, ecological and ethical values.

The available evidence suggests that land, water and other physical resources in Bangladesh are under considerable environmental strain, particularly from overexploitation, intensification and extension of agriculture, deforestation, and other human interventions. The rapid growth of population and low income with widespread incidence of poverty constitutes the main underlying cause of the increasing pressure. Towards the formulation of holistic environmental and development policies, it is also useful to have a forum for exchange of regional experiences. For example, in land conservation techniques, strategies of successful country experiences of neighbouring countries have proved the relevance of farming techniques such as contour farming, as well as other environmental problems such as saline soil rehabilitation though natural and artificial drainage, building of stone bunds towards developing cost-effective and applicable conservation strategies. In view of the land constraint in Bangladesh, these measures at local levels are important in both expanding resource access in an environmentally responsible manner, as well as in supporting policy initiatives towards conservation.

While macroeconomic tools are undoubtedly an absolute necessity, equally important towards translating policy initiatives and commitment at the macro level into grassroots reality is adequate attention to the role of stakeholders at local levels. Furthermore, the participation of beneficiaries ensures the success of programmes through the dual affect of increasing awareness on environmental issues and sense of ownership on the part of local residents towards the conservation of resources. Given the linkage between poverty and the environment, policy thrust and poverty alleviation and growth need to focus on:

(i) Removing causes of economic vulnerability;
(ii) Expanding the poor's economic options and crisis-coping capacity through income generating activities and human resource development interventions such as education, training.

Towards this end, security of land tenure, access to basic health and education, safe water and sanitation, credit, infrastructure support such as flood protection measures and storm run-offs are local concerns with enormous socio-economic spillovers.

2.4.1.6 Efficacy of Alternative Poverty Alleviation Programmes in Bangladesh

This study examines relative efficacy of various poverty alleviation efforts initiated and implement by Government (GO) as well as NGOs in Bangladesh, focussing on their relative programme outputs, impacts on poverty status, efficiency in resource use, employment, incomes and savings generation, and sustainability of the programmes. A combination of various quantitative as well as qualitative measures, such as socio-economic conditions of the programme participants, extent of coverage of the poor, programme costs and programme sustainability etc., have been used to indicate efficiency of the alternative poverty alleviation measures. A mix of both primary and secondary data has been used in analysing the relevant issues. In order to highlight the socio-economic impacts of the various programmes 'programme village' versus 'control village' and 'before and after' comparisons methods have been adopted using both primary and secondary sources of information collected through sample survey and review and analysis of published sources of data. The major findings of the study are the following:

(i) Commensurating the nature, extent and various dimensions of poverty in Bangladesh, a large variety of poverty alleviation efforts, categorized broadly as the 'transfer mode' and the 'credit mode' are being implemented by the Government and NGOs in Bangladesh. Besides targeted poverty alleviation programmes based on micro- credits and administered by both government and NGOs, a variety of safety net measures representing transfer mode and involving food and/or cash assistance through FFW, VGD and FFE are also administered by the Government.

(ii) NGOs in Bangladesh have earned recognition globally in terms of number, size and extent of operations. While some 20,000 NGOs are registered to date with the Department of Social Welfare, the effective NGOs are not as large. A global view of the magnitude of NGO coverage suggests that the MFIs are predominant agents of poverty alleviation in Bangladesh having an outreach of 14.08 million members. The estimated cumulative disbursement of loans stands at Tk. 3728 billion of which the estimated MFI share is Tk. 536 billion and the cumulative savings of both formal and informal sector is roughly around Tk. 315 billion. However, for analytical purposes, we have undertaken in-depth investigations of GB, BRAC, and BRDB's RD-12 poverty alleviation programmes, WFP assisted FFW programmes and the Government assisted FFEP programme to highlight the impact of safety net measures.

(iii) The micro-credit programmes administered by the various agencies and the MFIs have aimed at alleviating poverty by generating employment, augmenting productivity and incomes and savings and raising the standard of living of the poor. The analysis of the

socio-economic impacts of MFI interventions at the household levels in the programme villages and that in the control villages was carried to examine how the micro-credit interventions impacted on the lives and living standards of the programme participants vis-à-vis the non-participants.

(iv) The results obtained from the comparisons clearly indicate better socio-economic conditions and higher standards of living enjoyed by the participating households than by the non-participants. For example, there was a clear occupational shift in the programme villages towards self-employment from farm-employment, the relative proportions being respectively 74% in the programme villages compared to 51% in the control village. The important non-farm economic activities taken up by the respondents included trading, masonry, carpentry, fishing, boatmen, rickshaw-pulling and other services.

(v) The availability of credit provided the participating households access to inputs and services which in turn enabled them to earn average higher incomes i.e. Tk. 2500 per month from their various non-farm occupations compared to that (Tk. 1580.0) earned by the non-participants. The micro-credit intervention also infused savings habits among the poor with the BRDB participants saving the highest amount of Tk. 2751 per month, followed by the BRAC (Tk. 1677), WFP (Tk.1038) and GB (Tk. 490) participants compared to only Tk. 300.0 by the non-participants. Some of the programme participants also gained access to new assets such as land, machineries and equipment and other business assets through increased incomes and savings.

(vi) Not surprisingly, the access to higher incomes enabled the programme participants to spend more money on food than the control village participants to keep them nutritionally fit, work hard and produce more. The micro-credit intervention also created significant impacts on educational profile of the households, i.e. greater familiarity with alphabets, higher rate of schooling for children, overall higher investments made for education purposes (i.e. Tk. 4826 per household compared to only Tk. 2116 per household in the control villages).

(vii) More importantly, significantly high proportion of the programme village household owned hand pumps and used boiled water which gave them greater access to safe drinking water. In terms of possession of sanitary latrines, a significantly contrasting feature is also marked in that as against 70% of the programme participants only 6% of the control village households use the facility.

(viii) The assessment of the effects of the Government's safety net programmes (i.e. FFEP) reveals that the programme expanded steadily between 1993-94 and 1995-96 spreading to 1243 unions of the country, covering 16159 schools, benefiting 1416932 families and 2239805 students in terms of higher school enrollment and, greater attendance rate. However, the programme could not make any dent in respect of reducing the drop-out rate and the repeaters rates. Our survey findings reveal that the FFE programme

intervention benefited the children of the poor households not only in terms of having greater exposure to schooling but also having access to seasonal employment opportunities, access to food and cash benefits and higher food consumption. More importantly, a comparative assessment of cost-effectiveness of FFEP and other food-based safety net programmes also revealed that FFEP is the most cost-effective of all the programmes.

(ix) The issue of programme sustainability of the MFI operations has been investigated through examining their financial efficiency by examining their income and operating cost structures, measuring cost of delivery of services, unit cost of coverage and break-even interests. The results have been mixed. For example, Grameen Bank (GB) was highly dependent on donations and Government allocations to the extent of 80% for its incomes till 1995. However, the interest income of GB increased from 10-20% in the earlier years to 60% in 1996. But its cost of delivery of services though declined from initial years till 1989, increased to a peak in 1996 suggesting that the MFI is not in a position to cover its costs by the interest incomes and its long-run financial viability remains questionable.

(x) In contrast, BRAC's operations exhibit relatively strong position in terms of cost of coverage and cost of delivery of services. Both cost of coverage and delivery of services shows a declining trend in the recent years indicating positive signs of long-term financial viability. However, the interest incomes appear to be inadequate to offset the administrative expenses associated with the delivery of credit.

(xi) In case of BRDB's RD-12 programme, the cost of delivery displays a positive sign and also being the lowest among the MFIs and thereby the most viable among the three in terms of cost efficiency.

(xii) The overall results of analyses of the programme sustainability suggest that the MFIs need to redesign their programmes to be able to cover their costs of operation through interest incomes received from the borrowers. While increase in the lending rate and improving the administrative efficiencies are the two available options, restructuring of the administrative style and mechanism to cut down costs and improve efficiency seems to be the better option towards ensuring long-term viability and sustenance without being dependent on subsides as at present.

(xiii) While the programmes of the MFIs have made the poor bankable without collateral and impacted positively on the borrowers socio-economic conditions and human resources development in the programme areas, the programme intervention needs to be expanded significantly to increase coverage and reach the poorest of the poor. The programmes are thus replicable in other areas, subject to careful redesigning aimed at significant slash down of administrative overheads without adversely affecting the current low rate of default. This calls for serious research to scrutinize the size of loan, operational structure and efficiency, and most important of all, long-term financial viability of the

future programmes in the new geographical locations. Further, an overriding concern of any such programme should be the coverage of the poorest of the poor and also the "missing middle" comprising the low-income farmers and the self-employed groups engaged in various non-farm activities who do not qualify either for MFI loans and/or for formal credits.

2.4.1.7 Farm Level Investment in Bangladesh Agriculture

An analysis of the savings and investment behaviour of rural households is pertinent for understanding the constraints to agricultural growth. Rural households are likely to contribute a substantial part of such savings not only for being more numerous but also through their high saving propensities. This suggests the need for an indepth analysis of various aspects of rural savings and investment and for estimation of national savings rate on the basis of a large sample that is attempted in the present study. The objective of the present study is to provide an analysis of the savings rate of rural households and examine their investment pattern so that appropriate measures may be suggested to accelerate agricultural development in Bangladesh. The major source of data for the present study is the Rural Poverty Monitoring Survey (PMS) conducted by the Bangladesh Bureau of Statistics (BBS) in the months of April of 1996 and 1997.

Savings Rate

The differences between income and two alternative measures of consumption provide two estimates of savings in the present study.

These are:

- Net savings (s) as measured under the traditional concept; and
- Net savings including investment in human capital.

The savings rate (s) in the rural areas stands at 16.3 per cent of the rural income. A large per centage of this savings comes from the higher income groups. The savings rates in the two highest income groups are 24 per cent and 51 per cent respectively. In the income group just above the poverty line, the savings rate is close to zero. In the two lowest income groups, net dissaving is observed.

These values of savings have been obtained as net of the positive and negative savings within each income group. There are positive and negative savers among all income groups. High income groups have fewer negative savers and, therefore, net savings rate is positive while the reverse is true of the lower income groups.

The savings rate including investment in human capital is 19.7 per cent which is 3.4 per cent higher than the traditional savings rate. This indicates that human capital formation

accounts for 3.4 per cent of total rural income.

It is observed that the relationship of savings rate with land ownership of the households is not as strong as with income. The savings rate is positive even among the low landowning groups and is similar for the medium land ownership groups (1.00 to 1.99 acres and 2.00 to 4.99 acres). This is a reflection of the fact that income is the predominant determinant of savings and land ownership accounts for less than half of the income for most households.

The 1995-96 HES provides information on savings rate:

- The savings rate from HES is much lower than the rate obtained in the present study (6.3 per cent compared to 16.3 per cent); and
- The savings rate from HES shows fluctuations over time. It declined during 1984 to 1989, increased in 1992 but declined drastically in 1996.

The second feature is somewhat difficult to explain particularly when placed in the context of trends in domestic investment.

Savings Function

A Keynesian saving function has been estimated. The estimated coefficients and the constant term conforms to the Keynesian hypothesis of MPS as less than one and the APS being less than MPS (the intercept term being negative). The value of MPS is 0.45 and the regression coefficients is highly significant.

An alternative form of savings function, including the individual and household characteristics which may influence the returns to savings, has also been estimated. The coefficient of income in this equation is higher than the simple equation. The 'life cycle' variable represented by age of the head of households has a significant negative coefficient. The coefficient of the amount of credit from institutional sources is not significant. The size of agricultural land owned has a negative coefficient. This is explained by the fact that the sale of land is an important means for financing dissavings. The percentage of income from crops has a negative coefficient. The number of household members has a negative coefficient as expected, as it exerts a pressure on consumption needs. Contrary to expectations, the years of schooling has a negative and significant coefficient which is difficult to explain. The dummy for receiving remittances has a positive but insignificant coefficient. Availability of infrastructural facilities have been included as explanatory variables in the extended savings function. Closeness of bank, 'haat', bus linkage etc. are expected to increase the scope for savings. Access to irrigation and electricity are also included. These factors are likely to increase income and thereby increase savings. But these factors also represent a modernization of economic activities and, therefore, may directly influence household savings. The coefficient, of all the infrastructure variables except electricity are as expected.

Poverty Crisis and Savings

A disaggregated analysis of the saving propensities of poor and non-poor households is also provided. The lack of savings among the poor should not be viewed as a mere feature of the statistical relationship between income and savings. This is linked to the survival of the poor households.

The rate of savings among the households in the two lowest income groups is negative. About 40 per cent of the households have negative savings with a value of APS (average propensity of save) of –10.00 per cent or less.

A clear negative impact of 'crisis events' on household's realized savings is observed. For almost all income groups, households affected by crisis show a much smaller savings rate or a higher dissaving rate (among the two lowest income groups) compared to households not affected by crisis. Among the poor households, only 18 per cent faced with crisis are positive savers compared to 33 per cent among those who do not face crisis. The impact of crisis on savings of non-poor group is less glaring:64 per cent and 73 per cent among crisis affected and unaffected households respectively are positive savers. Borrowing and dissaving in the form of sale of land are the two major mechanisms used by the poor households to survive during crisis. Credit with high interests as well as credit from interest free or low interest sources also provide a major source of finance for these households. Seven and four per cent of the poor and the non-poor households during the crisis has also obtained support from influential village elite. A much larger percentage of the non-poor compared to the poor households depend on own savings and mortgage of land. The households choosing these strategies are less vulnerable since the land mortgaged out may be recovered in future. Use of own savings not only saves them from interest payments but also from the obligations arising out of personal loans from friends and relatives and other forms of support from influential persons. Thus the poor households are locked in a circular pattern of crisis and dissaving. One way of breaking the chain is through the provision of credit with low rates of interest.

Forms of Household Savings

The forms of household savings depend largely on the motive behind savings, which is guided by the existing asset base and investment portfolio. The absence of saving services makes it risky for the rural households to accumulate liquid savings. Therefore, the rural households develop certain practices to substitute for the provision for liquidity. Imperfections in other markets also have implications on the decisions on savings and the forms of savings. Such indirect influence takes place through their effect on the returns to savings put in different forms.

Agricultural productivity depends not only on farm investment, but also on its stock of capital (accumulated through investments over several years in the past). In this study, the stock of capital as well as the changes in the stock during the last one-year (i.e. net investment) are examined.

It is observed that there is no significant change in the use of farm machinery between 1996 and 1997 though the total value of implements slightly increased. Households with ownership of power tillers, power pumps and shallow tubewells increased. The investment in STWs was negative, even though the number of STW owning households increased. This is due to the availability of STWs at lower prices.

It is observed that the stock of other forms of agricultural capital increased during the period. The total value of transport, fisheries, and livestock assets increased by 15.1 per cent, 5.6 per cent, and 4.0 pr cent respectively. Such increases have contributed to a net increase in the value of investment in these assets by about 5 per cent.

A significant part of the savings of rural households is invested in housing and other related investment (e.g., drinking water). The valuation of such investment, however, is not available,. Even after taking into account the investment in trading sector and in housing, a significant part of the savings may be lying idle or being used in informal money lending business. The financial sector should adopt policies for channeling such savings to the formal financial sector.

It is often hypothesized that remittances may improve the asset position of rural households. The pattern of asset ownership among the receivers of remittances and the non-receivers has been examined. An interesting feature which emerges from the data suggests that remittance has a negative relationship with ownership of agricultural assets. The remittance is mostly invested in productive assets for non-farm activities.

To examine whether the differences in asset ownership among farm size groups and among the receivers and non-receivers of remittances are statistically significant, a multiple regression analysis is used. In the analysis, an attempt has been made to identify the influence of other relevant factors along with farm size and remittances.

As it has been mentioned, one may expect that the flow of remittances may have a positive impact on farm investment. However, this has been negated by the data. In fact, remittances have a negative impact on farm assets, and this is more significant when farm asset is defined in a wider sense to include livestock. The gender of the head of household has been included as a dependent variable to examine whether female headed households face a disadvantaged situation in this respect. This variable, however, turns out to be insignificant. Non-crop income has a significant positive coefficient. Thus there are complementarities between agricultural and non-agricultural activities.

Investment on Agricultural Inputs

The expenditure on current inputs is not included in the traditional definition of investment. However, there is a need for widening the definition, especially for societies with significant agricultural production. In an agricultural production system based on family farming,

investment in capital items is not quite common. Fertilizer and irrigation water are the productivity augmenting inputs in such systems.

It is observed that total expenditure on fertilizer has been continuously increasing (except in years 1985-86 and 1993-94). The average annual growth in the value of crop production during the period is 4.43 per cent and the average annual growth in input costs is 12.0 per cent. Thus the farmers are observed to invest a continuously rising per centage of their incomes on inputs and the return from such investment is not only low but declining. During 1990-91 to 1992-93, the expenditure on the inputs increases at a growing rate, yet the growth in GDP from crops shows a declining trend. This is because, the rise in expenditure has been due to increase in the prices of inputs, particularly fertilizer and not due to increases in quantity. In periods of higher prices of fertilizer, farmers' expenditure on inputs increases and still the quantity of inputs is lower than in periods of low input prices. In fact, the farmers do not have alternative areas of investment and, therefore, they are forced to continue to spend on agricultural inputs even if the prices increase. But given their constraints, they cannot maintain the input levels in years of high input prices.

The survey data provide information on current income and the per centage of income spent on inputs and the amount of expenditure on inputs by farm sizes. The per centage of income spent on inputs for crop production and the variation of input use among different farm size and income groups may be used to identify the constraints to such investment.

It is estimated that 5 per cent of total income of rural households is spent on inputs. It is expected that total expenses on material inputs will increase with farm size. However, the per centage of income spent on inputs does not increase monotonously with the farm size. It increases until 7.50 acre size farms and thereafter slightly declines. This may be due to higher per centage of non-farm income for the larger farm size groups.

Gender and Savings

To understand the gender differences in savings behaviour, the savings rate and savings behaviour among the male and female headed households have been distinguished. In the present study those female headed households who do not receive remittances from male earners have been identified as 'effective female headed households'. Thus two types of female headed households are considered: those who get remittances and those who do not.[7] To compare male and female headed households, the former has also been classified in a similar way. The savings propensities of men and women may be different because of differences in attitude towards savings. At the same time, the difference in the absolute level of savings by women and men deserves attention since total savings in the hands of women is an indicator of their empowerment.

[7]Remittances usually come from household's male earners, women sending money has not been observed in the survey data.

The female headed households, who do not receive any remittances, have a higher savings rate than the corresponding male headed households. Another finding which emerges from such comparison is that in all income groups below the highest group (i.e. less than Taka 7,200), savings rates among female headed households are much larger than the male headed households of the respective income groups. The differences are higher as one goes down the income scale. Thus the fact that households, which are apparently female headed but receive remittances from outside and fall in the highest income strata, have lower savings rate than the corresponding male headed households blurs the picture of the savings efforts of poor women.

The case studies on savings by women provide evidence of ingenuity among women who try to balance between riskiness of investment and return from such investment.

Policy Implications

The present study shows that the savings rates among the rural households are substantial, about 16 per cent of income in the aggregate, and investment on physical capital does not account for all savings. It has also been argued that a part of investments in physical capital takes place since facilities for financial savings are lacking. Therefore, it is pertinent that formal financial institutions should make concerted efforts to mobilize rural savings.

It has been revealed that the farm households spend a significant proportion of their income on inputs for agricultural production. In the absence of large investment on physical capital, policies should be adopted to enable the farmers to use material inputs in required quantities. In this respect, the support in the form of short term credit will enable the farmers to plan the use of optimal inputs. Two aspects of such credit facilities deserve attention: high cost of such operations and constraints in timely disbursement of loans. Agricultural inputs must be applied at the right time in the crop season and delayed sanctioning of loans may not serve the purpose. This may also lead to unproductive use of the loan and thus creating problems of non-repayment.

Women's capacity to generate savings, even in the face of various adversities, demands that they receive attention in policies for mobilization of savings. In this respect, they need support from both savings and credit services of the financial institutions.

The savings rate in the rural areas stands at 16.3 per cent of the rural income. A large per centage of this savings comes from the higher income groups. The savings rates in the two highest income groups are 24 per cent and 51 per cent respectively. In the income group just above the poverty line, the savings rate is close to zero. In the two lowest income groups, net dissaving is observed.

The savings rate including investment in human capital (shc) is 19.7 per cent which is 3.4 per cent higher than the traditional savings rate. This indicates that human capital formation

accounts for 3.4 per cent of total rural income.

2.4.1.8 Microcredit, Microenterprises and Poverty

Report has not yet been received. The author informed us that he has got a by-pass surgery and doctor advised him to be in complete bed rest for couple of months. We are closely monitoring the situation. The report will be submitted to IDRC as soon as we received it.

2.4.1.9 Interlinkages of Agricultural Diversification in Rural Bangladesh

Although the share of agriculture in the GDP has declined over the past years, agriculture still remains the leading sector of the economy of Bangladesh. While the overall share of agriculture in the GDP has declined over the past years, a noticeable change has also occurred in respect of relative shares of agricultural sub-sectors in the GDP. The contribution of crop sub-sector to GDP declined from 29.7 per cent in 1990/91 to 23.7 per cent in 1996/97. The contribution of livestock and fisheries sub-sectors, however, increased to 3.1 per cent and 3.2 per cent respectively from 2.7 per cent in each case during the same period. While the crop sub-sector showed only a marginal growth rate during the period 1990/91-1996/97, the growth rates for livestock and fisheries sub-sectors increased from 2.2 per cent and 5.8 per cent in 1990/91 to 8.0 per cent and 8.9 per cent respectively in 1996/97. This can be viewed as an aggregate indicator of diversification, induced presumably by recent policy changes. The growth in crop agriculture has been dominated by rice which accounts for about 70 per cent of gross farm revenue. In order to reduce emphasis on rice, crop diversification programme was launched in the country from late eighties. The programme has so far attained limited success.

It is maintained that there are bright prospects of diversification of agricultural activities along livestock, fishery and other household agricultural activities. Diversification of agricultural activities have also important backward and forward linkages. Expansion of pond fish culture has given rise to establishment of mini hatcheries, marketing of fish fries on the one hand and production and marketing of feed and fish products on the other. Similarly, expansion of dairy and poultry farming has opened up the avenues of production and marketing of cattle/poultry feed and dairy/ poultry products. Also increasing exports of shrimp and vegetable products to foreign markets have added new dimension for analysis of agricultural diversification. All these interlinkage aspects point to the need for examination of the nature and magnitudes of different effects on socio-economic classes of rural people. It is

also important to examine the impact of public policy reforms on the pattern and extent of diversification and their linkage effects.

Some recent contributions to the study of agricultural diversification in Bangladesh have focused only on crop diversification (Metzel and Ateng 1993, Zohir 1993, Biswas and Mandal 1993, Mahmud et. al. 1994, World Bank 1995). Since a typical farm household in Bangladesh combines crop and other enterprises such as livestock, fishery, agroforestry and homestead activities in the overall farming system, it is worthwhile to examine the pattern of organization of the enterprises and their interlinkage effects which contribute to income, employment, family nutrition on the one hand and natural resource management on the other.

This study examines the pattern of changes that has been taking place in the organization of farms in terms of combination of crop and non-crop enterprises, and how the activities are integrated in the synergistic manner to yield greater benefit to the farm households and rural community as a whole. Attempts are also made to link the pattern of changes to policy interventions in vogue and to draw implications for future policy formulations for equitable and sustainable growth of the agricultural economy of Bangladesh.

Crop Sector Diversity and Interlinkage Effects

In addition to cropping pattern and cropping intensity, the crop sector diversity is examined in terms of relative importance of each crop in the cropping system. This measure implies that a more diversified farm is one which does not depend too heavily on any single crop such as rice in the context of Bangladesh. It has been evident from the analysis that for most of the non-cereal crops, area under crops as per cent of net cropped area either declined or remained static over the period from 1973 to 1990. While area under foodgrain (rice and wheat) as per cent of net cropped area increased from 111 per cent in 1973/74-1977/78 to 137 per cent in 1991/92-1995/96, per cent of net cropped area under non-foodgrain crops decreased from 38 per cent to 34 per cent during the same period. As regards gross value share of individual crops in the crop sector's gross value of output, it has been found that gross value share of foodgrain crops increased from 68 per cent in 1973/74-1977/78 to 75 per cent in 1991/92-1995/96. On the other hand, gross value share of non-foodgrain crops decreased from about 32 per cent to 25 per cent during the period. The only non-cereal crop for which gross value share slightly increased was tubers. Thus if diversification is measured in terms of shift of acreage or production away from rice/cereals, crop-agriculture of Bangladesh cannot be considered to have moved along the path of diversification.

Successful agricultural diversification depends on the structure and pattern of consumer demand for agricultural commodities both in the domestic and international markets. In general, diversified growth is stimulated as consumers shift from basic cereals to higher-

value foods as their incomes increase and farmers respond to market opportunities provided by changing pattern of food demands. A well developed agro-processing sector provides a vital link in the stimulation of agricultural diversification. Bangladesh has a number of agro-industrial enterprises which process a wide range of agricultural commodities. These enterprises are grain milling, sugarcane crushing, oilseed crushing, jute processing, cotton ginning, processing tobacco leaves and leather tanning. Besides, there are freezing, canning and some other processing activities which are of course, limited to a few products.

Small scale rice milling provides an excellent opportunity for rural employment, particularly, for rural women. Refrigerated storage facilities are mostly limited to storage of potato. Diversification will require expansion of refrigerated storage facilities for other commodities such as fruits, vegetables, fish and meat. Processing of sugarcane for *gur* making, in addition to acting as import substitute for sugar, offer additional employment opportunities for the farm families on the one hand and stimulates production of sugarcane in remote locations far away from sugar mills and thereby contributes to agricultural diversification. The major processing activity related to edible oil falls in the industrial processing activity in which crude oils imported from abroad are refined into edible oil. Local crushing of mustard, soybean, sesame and groundnut are done by traditional methods and hence not cost-effective. Successful exploitation of the export market for the high-value fruits, vegetables, fresh flowers and aquatic products will require high degree of sophistication in processing, packaging and handling of the products.

Expansion of Non-Crop Activities and Linkage Effects

The non-crop agriculture sector is particularly important for its contribution to rural employment and supply of balanced nutrition to rural as well as urban population. The non-crop agricultural activities provide full time employment to about 25 per cent of the rural population. A large number of rural people also work part time in the non-crop sector. The unique feature of the non-crop sector is that it can absorb a large segment of women labour force of rural Bangladesh.

Available evidences indicate that for most of the species of livestock animals/ birds, the number of new farms established increased between the period from 1990/91 to 1994/95. Total and per capita production of meat, milk and eggs also increased modestly during the period. The expansion of activities along production and processing of these products, in addition to providing income and employment for the rural labour force, is contributing to nutritional balance for the vast majority of under nourished population.

With respect to the fishery sub-sector, total production and per capita availability of all fish increased form 754 thousand metric tons and 7.7 kg respectively in 1983/84 to 1200 thousand

metric tons and 9.6 kg respectively in 1994/95. The improvements in fish production, particularly inland production, are attributed to different intervention measures taken by the government and non-government organizations (NGOs) in the area of fisheries research, extension and credit.

The last two decades have witnessed a phenomenal growth in commercial shrimp culture. Area under shrimp culture is estimated to have increased from merely 20,000 hectares in 1979/80 to 130,000 hectares by mid 1990s. As an export item, shrimp grew from next to nothing in the early 1970s to contribute about 11 per cent to the total export earning in the mid 1990s. The share of shrimp export in total primary export increased from 1.97 per cent in 1972/73 to as high as 51.88 per cent in 1997/98.

Commercial shrimp culture has created a substantial economic and social transformation in the shrimp belt of Bangladesh. In addition to providing direct income to the '*gher*' owners, shrimp culture, through backward and forward linkage activities, has opened up employment and income earning opportunities for a variety of stakeholders. According to MPO (1986) estimate, shrimp culture generated 10.2 million person days of employment on-and off-farm from 51,000 hectares of shrimp area in 1983. With the projected increase in shrimp area, the volume of employment was projected to be 22.7 million person days in 1990 and 59.5 million person days in the year 2005. Shrimp culture has also opened up the avenue of new employment opportunities for women. According to one estimate, women represent about 73 per cent of shrimp depot workers and about 65 per cent in the shrimp processing plants. Shrimp fry collection is also an important source of employment for rural women in the coastal regions.

The forestry sub-sector is playing an important role by providing income earning and employment opportunities through a number of afforestation programmes undertaken by government and NGOs. These programmes have been able to bring about significant changes in the attitudes of people towards planting and protecting timber and fruit trees in their homesteads, crop fields and other places of public utilities. The results are visible in the form of renewed greeny looks of the villages, embankments, highways and other publicly owned *khas* lands.

Diversification Linkages: Results from Field Survey

The micro analysis of diversification and the linkage effects revealed important relationships between the extent of diversification and the level of household income, employment and consumption of different classes of households in different locations. Among the four locations studied, cropping intensity was the highest in Comilla and lowest in Mymensingh. As regards crop diversity, measured as proportion of non-rice area in the total cropped area,

Jessore had the lowest proportion of rice area (57 per cent) and hence could be considered as having more crop diversity compared to Dinajpur area where the proportion of rice area in the total cropped area was the highest (64 per cent).

An examination of the number of crop, non-crop and non-agricultural enterprises practised by different farm size groups in different locations revealed that the total number of enterprises practised by the landless households were the lowest in all the locations. The highest number of enterprises were practised by medium farms followed by large and small farms, except in Mymensingsh where small farms were found to have practised the highest number of enterprises. As regards composition of enterprises practised, landless farmers obviously had the lowest number of crop enterprises. The number of non-crop and non-agricultural enterprises were also one of the lowest for the landless farmers in all the locations studied. Among the non-agricultural enterprises, rickshaw pulling was common for landless and trading was common for small, medium and large farms in all the locations.

Regarding contribution of enterprises to household income, non-agricultural enterprises contributed the highest proportion of household income for the landless households. Crop enterprises had the highest contribution to household income for large farms in all the locations. Food expenditure as per cent of total expenditure was the highest for landless farmers in all the locations studied.

The number of enterprises practised was positively related with gross household income in all the locations. However, the level of employment increased with increase in the number of enterprises practised only upto certain level, and employment level generally decreased with further increase in the number of enterprises, particularly when the number of enterprises practised exceeded 10-12. Thus, in the extensive margin of the number of enterprises, farm households may have been deriving higher income not by extensive use of labour, but by improving labour productivity.

Policy Implications

In the context of crop agriculture there has not been enough of diversification, particularly in terms of expansion of area and production of non- cereal crops, although many non-cereal crops such as potato, vegetables, cotton and spices have higher financial and economic returns than HYV rice. This can be attributed to very high price risk, lack of storage and transportation facilities associated with marketing of these crops. Also, the existing on-farm water management systems are not conducive to production of rice and non-rice crops in the same service units. These problems can be solved by (i) improving storage and transportation infrastructure and thereby reducing price risks; (ii) designing non-farm water management systems conducive to production of rice and non-rice crops in the same service units; and (iii)

improving yield and hence profitability of the non-rice crops through technological change and introduction of price, marketing and structural policy reforms.

The domestic markets for some of the high-value non-cereal crops are limited because of the relatively lower living standard of the people. Successful exploitation of the export market of these crops will require high degree of sophistication in processing, packaging and handling of the products. This will also require some public investment in building marketing infrastructure and also in the promotional activities in the export market.

In the livestock sub-sector, the incentive bonus scheme introduced by the government had some positive impact on establishment of new dairy and poultry farms, production and consumption of livestock products and also employment generation. However, the impact was short lived because of the lack of proper monitoring of the programme and supporting intervention in the pricing of inputs and outputs, and development of marketing infrastructure. These aspects need to be incorporated in the public policy agenda.

Expansion of fishery related activities, particularly the pond aqaculture and brackish water shrimp culture has been significantly contributing to income and employment generation and household nutrition. However, shrimp culture is alleged to be making some negative impact on income distribution, environment and social harmony. This calls for quantification and measurement of the negative impacts and incorporation of the results in the pricing mechanism for sustainable development of the shrimp industry of Bangladesh.

In the forestry sub-sector, expansion of homestead forestry, agro-forestry and social forestry offer excellent opportunities for household income and employment generation on the one hand and protection of environment on the other. However, there seems to be lack of effective participation of people, particularly in the social and agroforestry activities. Public policy should, therefore, address the issue of motivation and training of prospective clientele groups for sustainable development of the forestry sub-sector as an effective linkage of agricultural diversification in the country.

2.4.1.10 Rural - Urban Migration and Poverty: The Case for Reverse Migration in Bangladesh

1. The process of migration in Bangladesh and the concomitant urbanization evolve from the circumstances characterized by extreme poverty and entitlement contraction among particularly the marginalised and the landless poor. The migration of the poor engendered

the ‘ruralization’ of the urban centres by directly transmitting rural poverty and backwardness to the towns.

2. Urban population in the country grew during the past three decades at an annual rate of about 6 percent, compared to the rural population growth of just around 2 percent per annum. Internal migration has contributed the most to the high rate of urban population growth. This trend is likely to continue in the future as well. According to an ESCAP projection, rural-urban migration is expected to contribute to about 58 percent of Bangladesh’s urban population growth, at least up to 2005.
3. The act of migration brings in its wake significant social and economic costs. Thus, there are now more slums, higher unemployment rate, more environmental hazards and pollution, unacceptable living conditions, more human frustrations, and more crimes than ever before. There is in fact no doubt that rural-urban migration is one of the contributors to the growing urban poverty and the undesirable consequences associated with the process of migration.
4. Migration reduces the number of the young, able-bodied, and the relatively better educated people in the villages. A continuous movement of this category of people from villages to towns may cause an imbalance in the quality of human resources between rural and urban areas, which may eventually impede rural development.
5. More often, the migrant may fail to get in town the appropriate job he wants. The long period of waiting for job increases his pecuniary cost and psychological tension. Often he ends up getting no job at all, and thus remains unemployed. What is worse, he may out of frustration choose criminal paths for making a living.
6. The information collected from field survey conducted for the purpose of the present study reveals that the process of migration in Bangladesh is strongly influenced by both the push and the pull factors, of which the principal push factor is the situation of insufficient job prospects in the villages, while the perception of the higher probability of getting employment and earning higher income in the cities is the predominant pull factor. Among the other pull factors, better education, better health services and various social amenities available in the cities stand out to be the more prominent ones.
7. The pull factors that induce migration to urban locations are largely the direct or indirect results of government policy, which has a built-in bias towards urban areas. The bias is reflected in the allocation priorities and the pattern of public expenditure during the various plan periods, and also in the disparate flow of credit to urban and rural areas.
8. It appears from the survey that although the migrants’ perception of the probability of getting jobs in the cities was optimistic, getting a job was not any easier. About 60 percent of the respondents expressed that it was rather difficult to get jobs after migration and that the process of job search was painful and indeed very lengthy. But surprisingly, in spite of these difficulties, migrants seemed to be adamantly sticking to the city, thus

lending support to the view that sufficient job prospects in the villages of these migrants are still a far cry.

9. The results of the survey also show that the migrants, when employed, enjoyed higher income and expenditure levels, better health services and sanitation, better educational opportunities for the children, and better housing. Nevertheless, they suffered from problems of extreme congestion, environmental hazards, deteriorated law and order situation etc. There are higher chances of accidents. The neighbourhood may not only be unclean, but may also be noise-ridden. In addition, familial and interpersonal relationships can undergo substantial setback. Children and adolescents have the danger of being exposed to the undesirable surroundings and associations. Juvenile crimes may increase as a result. These factors may act as added forces for the conscious migrants to reconsider the possibilities for reverse migration.
10. Asked about what would motivate them to go back to the village, about 90 percent of the respondents cited the establishment of new industries and creation of new job opportunities to be the important pre-condition. This is followed by other factors like the development of roads, improvement of educational opportunities, and the increase in the use of new technology in agriculture. The fulfillment of these pre-conditions, supplemented by the availability of essential amenities of life, including better health care and sanitation, education and housing, can create the environment congenial for setting the flow of migration in the reverse order.
11. Unless the benefits of migration to the cities can be generated in the rural setting even by a modest proportion, if not to the fullest possible extent, the idea of initiating and sustaining the process of reverse migration will not be translated into reality.
12. The regression analysis carried out in this study shows that the male out-migrates from villages in a greater number than the female who presumably are more likely to move out to another village due to marital reasons.
13. An inverse relationship is observed between the size of the family and the propensity for migration. It might be the case that for bigger families the act of migration may prove harder and the cost of migration larger than the smaller ones.
14. The married persons exhibit a higher propensity for migration, although it is not clear why this is the case.
15. The average age of the members of the household is positively related to, and the age of the principal migrant negatively related to, the decision to migrate. It may, however, be the case that the larger the size of the adult members in a household, the bigger is the probability that the principal wage earner in that household will decide to migrate to the town. Contrary to our hypothesis, we find an inverse relationship between the average years the principal migrant spent in school and his propensity to migrate. It appears that for the principal migrant, besides the educational level, many other factors may influence the decision for migration, and those factors may be more important for him.

16. The results of estimation of the probit model on reverse migration reveal, among other factors, that governmental efforts towards industrial expansion in the rural areas is likely to encourage migrants to go back to the village.
17. Also, the study has found that frequent visits by a migrant to the village probably reflect a less eager attitude on his part for return migration to the village with which he has been able to establish a close link through repeated visits. It might also be true that the migrants who are frequent visitors to the village may find it cheaper to leave the family in the village. They may be willing to endure the strains of visits to the village and live in the city without the members of their family.
18. Still another finding of the study corroborates the hypothesis that migrants having children attending schools in the city experience a lesser urge for return migration than those whose children are not. It then appears that the education of children is of prime importance to the migrants whose demand for better educational environment can only be met in an urban setting.
19. It appears that the policy of stopping out-migration and inducing reverse migration becomes equivalent to the policy of poverty alleviation through the creation of employment and income generating activities in the rural areas.
20. The essential preconditions for generating the environment conducive to reverse migration and alleviation of poverty includes such measures as the creation of jobs in the agricultural and non farm activities, improvement in agricultural productivity, easy availability of credit to the land-less and the marginalized small farmers, enhancing access to ownership and/or use of land and other productive resources including modern technology, establishment of rural industries, development of rural infrastructure, improvement of educational and health facilities and establishment of vocational training centres in the rural locations, to name but a few.
21. Unless the gap between urban and rural areas in terms of the quality of life and living conditions can be systematically narrowed down, the objective of alleviation of poverty through inducing and sustaining the process of reverse migration will hardly be materialized.
22. Now the question is how far the governmental bodies as well as the non-governmental agencies have been successful in enhancing the quality of rural life and living conditions in the rural areas through their programmes and strategies.
23. Poverty alleviation and rural development received one of the top priorities in all the past Five Year Plans of the government. Governmental initiatives and efforts in this regard led to the formation of such programmes like (1) Cooperatives for the poor under the Bangladesh Rural development Board (BRDB), (2) Small Farmer and Landless Development Programme (SFDP) under the Ministry of Local Government, Rural Development and Cooperatives (LGRD&C), and (3) Food for Work Programme

(FFWP) and Vulnerable Group Feeding Programme (VGFP) under the Ministry of Relief and Rehabilitation (now called the Ministry of Disaster Management and Relief).

24. Over the years, governmental efforts in the alleviation of poverty by providing productive employment through the diffusion of modern agricultural technology, technological improvement of cottage and rural industries and non-farm employment generation in rural locations in areas like fisheries, livestock and rural infrastructure (construction of roads, embankments etc.) were supplemented by the active participation of a number of non-governmental bodies, notable among them being Grameen Bank, BRAC, PROSHIKA, ASA, and RDRS.
25. Unfortunately, the poverty alleviation programmes during the successive plan periods did not produce the expected result. The country's economic reforms under the Structural Adjustment Programmes (SAP) since 1980 have had a favourale impact on macro-economic stabilization and growth but had adverse effects on the poor. Economic growth has been accompanied by a worsening of income distribution between the rich and the poor.
26. In such a situation, the Government started targeted income and employment generating programmes as a 'safety net' for the poor that were left out of the market-based production and distribution process. These programmes implemented by Government Ministries/Departments and NGOs contributed significantly towards alleviation of rural poverty in the country. The most important safety net programme has been the Food for Works Programme (FFWP), that provides employment to the rural poor during the lean periods through construction of rural infrastructure. Other programmes such as Food for Education (FFE), Vulnerable Group Development Programme (VGDP), and Rural Maintenance Program (RMP) were also launched to accelerate the pace of poverty alleviation in the rural areas.
27. In order to address the issue of poverty alleviation in the near future, a number of steps are envisaged in the Fifth Five Year Plan (1997-2002). Government is keen on the objective of poverty alleviation which it wants to achieve through better education, health, and family welfare facilities, creation of self-employment opportunities for the rural poor in such activities as animal husbandry, fisheries, poultry, horticulture and various non-farm activities, the increase of wage employment opportunities through rural infrastructural development and maintenance, reformation of the safety-net programme of the FFW, ensuring adequate funds for the pro-poor projects, disbursing micro-credit to the poor, sustaining effective Government-NGO cooperation, correcting and reforming existing institutional arrangements, and so on.
28. A successful implementation of the poverty alleviation strategies as envisaged in the Plan can be expected to greatly contribute towards improving the economic condition and quality of life of the rural people, which in turn will probably reduce the pace of rural to

urban migration and also set the environment for initiating a process of urban to rural remigration.

29. The objective of inducing a process of reverse migration will also call for a reduction of any urban bias that might be there in the Government's development strategy. Consistent policies in this regard will entail creation of incentives to encourage relocation of industries and businesses from urban to semi-urban and rural areas.
30. Thus, with a view to achieving a balanced spatial distribution of production and employment the Government may adopt a regional development strategy such that it will ensure the growth of small and medium sized urban or semi-urban centres, of which the Upazillas are good examples.
31. One can also visualize the possible beneficial effects of locating Export Processing Zones outside the major metropolitan areas, establishing industrial estates in semi-urban centres, upgrading the important rural haats and bazaars into growth centres, and establishing youth training centres in all thanas on creating favourable conditions attractive to the people that will influence their decision in favour of leaving urban locations and migrating back to the villages from where they originate.
32. There are also other forces at work that are likely to slow down the pace of rural-urban migration and also induce return migration. To cite an instance, Bangladesh Krishi Bank is currently contemplating to undertake a special programme to provide credit to the migrants who will be genuinely interested in migrating back to the village. The amount of credit the Bank proposes to provide to each migrant household should help rehabilitate the migrants in the ruralareas. Programmes such as this, if implemented in right earnest, may be expected to reduce the flow of rural-urban migration and also encourage reverse migration.
33. The Government has established the Employment Bank with the objective of providing credit to the unemployed youths. The main activities for which the Bank's loans will be made available include poultry, hatchery, fish farming, horticulture, sericulture, light engineering, saloon, laundry, medicine shop, carpentry, automobile repairing workshop, bee keeping, food and fruit processing etc. The expansion of the Bank's operation outside big cities and towns is likely to encourage people to start business in and around the place of their origin and thus discourage the less rewarding act of migration.
34. Other ongoing poverty alleviation measures of the Government, viz., the "Asrayan Prokalpa", allowances for the elderly people, test relief and the post-flood VGD programme are expected to activate the rural economy and encourage reverse migration from the urban areas.
35. The initiation and acceleration of the process of reverse migration will ultimately hinge on the success in allocating resources for the upliftment of rural Bangladesh without at the same time jeopardizing the economic programmes in the urban areas. In other words,

the trade-off between urban and rural development needs to be assessed correctly in keeping with the objectives detailed above.

2.5 Dissemination of Project Activities

The prime objective of the project was to provide policy assistance based on adequate research. In addition to the regular disseminating activities, twelve seminars/workshops/meetings and four training programmes have been conducted and, ten books/mimeographs, nine focus studies, four working papers, thirteen technical papers, fifteen policy briefs and even issues of the MAP Newsletter have been published. Newsletters, policy briefs and other publications have been circulated regularly among relevant policy makers, researchers, academicians, relevant institutions, donors and others.

2.5.1 Seminars/Workshops/Meetings conducted under the Phase-III of the project

- CIRDAP –BBS Seminar on Monitoring Adjustment and Poverty (MAP), November 1995, CIRDAP, Dhaka.
- MAP Steering Committee Meeting, 18 December 1995
- CIRDAP –BBS Seminar on Monitoring Adjustment and Poverty (MAP), August 1996, CIRDAP, Dhaka.
- CIRDAP –BBS Seminar on Monitoring Adjustment and Poverty (MAP), April 1997, CIRDAP, Dhaka.
- MAP Steering Committee Meeting, 13 April 1997
- Review Meeting on Progress of Poverty Monitoring Component under the MAP in Bangladesh Project, 12 May 1997.
- Expert Group Meeting on CIS of PMS under MAP project, 18 September 1997, CIRDAP, Dhaka
- CIRDAP - BBS National Seminar on Poverty Monitoring, March 1998, CIRDAP, Dhaka
- MAP Steering Committee Meeting, 22 July 1998, CIRDAP, Dhaka
- CIRDAP - BBS National Seminar on Poverty Monitoring, April 1999, CIRDAP, Dhaka
- Regional Workshop on Modelling Structural Adjustment and Income Distribution: CGE Framework, May 1999, CIRDAP, Dhaka
- CIRDAP - BBS Regional Seminar on Poverty Monitoring, May 2000, CIRDAP, Dhaka

2.5.2 Training Programmes

- Training on Social Accounting Matrix, 4-22 March 1998, Planning Commission, Dhaka.
- Training on GIS, 15-25 March 1998, SPARRSO, Dhaka.
- Training on GAMS and CGE Modelling, 26 April 1998 - 4 May 1998, CIRDAP/Planning Commission, Dhaka

❖ Training on GAMS and CGE modelling, 5-15 October 1998, CIRDAP/Planning Commission, Dhaka

2.5.3 Recommendations from various meetings / seminars the project

Meetings / Seminars

National Seminar on Monitoring Adjustment and Poverty (MAP) in Bangladesh, CIRDAP Dhaka, 1-2 November, 1995

Some of the major recommendations that came out during the discussions are summarised below:

i) Poverty Monitoring System (PMS)

The future scope of the PMS may be sharpened and if necessary, expanded to address the following issues:

- household income from subsistence and home production;
- more satisfactory empirical evidence on crisis coping capacity;
- supplementing the traditional food based measure of poverty line by measures that consider other household attributes;
- treatment of landless poor as a special group within the poor;
- access to common property resources as determinant of crisis coping capability;
- possibility of devising a Poverty Index (PI) like the Human Development Index (HDI) computed by the UNDP.

ii) CGE Modelling

- efforts to incorporate qualitative aspects of poverty within the modelling framework;
- net worth of the households used in fixed capital formation;
- the issues related to under-employment of the labour force;
- interlinkages among different markets;
- issues related to the land market;
- issues related to rural credit, markets, water and other markets;
- socio-economic classifications of the households that can be easily amenable to policy prescriptions.

iii) Research Issues

- the role of women as micro agents in environmental conservation;
- the impact of pisci-culture (fishery projects) especially shrimp cultivation on environment focusing on the trade-off between export earnings from shrimp and income distribution.

CIRDAP-BBS National Seminar on Poverty Monitoring, CIRDAP Dhaka, 19 August 1996

Based on the discussions during the seminar, recommendations were made to sharpen, and expand the future scope of the Poverty Monitoring System (PMS) to address the following issues:

1. In order to improve the confidence level of the estimates, the sample size should be expanded and several rounds of survey should be carried out during the lean periods to study changes in poverty over time;

2. In the estimation of poverty, along with the head-count ratio, other measures of poverty such as poverty gap ratio and gini co-efficient should be computed and compared with. The poverty analysis should be graduated from the head count ratio to generation of poverty profiles and detailed classification by poverty by occupation, wage labour and socioeconomic characteristics of the poor. Emphasis should be given to crisis-coping behaviour of the poor and environmental and ecological issues related to poverty. Cross-classification of poverty groups should be attempted to analyse poverty correlates and changes in poverty profile of specific groups. For a better comprehension of the poverty scenario, poverty levels of small and large households should be presented separately due to the observed high correlation of poverty with the size of household. The prime objective of the PMS should be to analyze the dynamics of poverty involving both state and process dimension of poverty and issues of policy concern;

3. To complement the Household Expenditure Survey (HES) and other sources of poverty data, key variables should be identified with more frequent updating of the data. In this respect, the focus should be on the flow variables to provide trends within a smaller time frame;

4. In calculating per capita consumption, adult equivalent scales should be devised with separate weights to male, female and children;

5. Monitoring of urban poverty should be institutionalized as a component of the PMS to bring out the issues and interactions of urban-rural poverty situations;

6. The design of the PMS should be appropriately expanded to cover poverty information at the regional levels;

7. The poverty analysis under the PMS should be linked with national account statistics and changes in environmental- economical factors;

8. The PMS findings should be highlighted and appropriately used to generate a comprehensive picture of poverty in the country along with wide dissemination of the results. For this, the robustness of the poverty line along with other estimates should be established. This should be based on a satisfactory methodology of data collection based on pretest results;

9. An appropriate methodology to provide employment absorption capacity in the rural areas should be developed;

10. If necessary, a Technical Committee should be formed for periodic review of the project activities.

CIRDAP-BBS National Seminar on Poverty Monitoring, CIRDAP, Dhaka. 30 April 1997

Session 1: Poverty Monitoring Survey in the Urban Areas

GENERAL

1. A modular approach should be developed for monitoring poverty involving income as well as consumption. Informal activities should be adequately covered in developing such a module;
2. Categorization of the urban population by occupation should be consistent with other surveys of BBS for ensuring comparability;
3. Gender dimensions should be provided for relevant indicators;
4. Labour force status should be included to monitor the poverty process;
5. The FEI model should be adequately refined to make it relevant for policy purposes;
6. The definition of the urban poor should be made explicit;
7. Relevant impact indicators should be developed and incorporated in the survey;
8. The occupational classification should be made more realistic (e.g. indicators on job security and other terms of employment could be included);

9. Information generation of the poverty surveys should be related to policy changes;

10. Issues regarding female headed households should be highlighted;

11. Poverty profiles of the poor should be provided.

METHODOLOGY

12. In order to cover disaggregated data by gender, age and other characteristics, the sample size should be expanded, if necessary;

13. A short description of the enumerating areas (EAs), their distribution pattern and methods of quality control adopted during data collection should be provided.

INDICATORS

14. The set of relevant indicators which should be covered in future surveys could include the following:

i) Access to credit;

ii) Asset ownership including land and houses;

iii) Access to electricity;

iv) Literacy/education/skills;

v) Immunization coverage;

vi) Access to family planning;

vii) Nutrition level;

viii) Floor space per capita/person per room;

ix) Employment rate;

x) Labour force participation;

xi) Children at work;

xii) Household size;

xiii) Distance of drinking water source;

xiv) Crisis coping and access to NGO/GO support;

xv) Self-categorization;

xvi) Other disaggregated statistics (e.g. food distribution) by age, sex etc.;

xvii) Quality of life indicators;

xviii) Migration status.

ANALYSIS

15. The report should address the Basic Needs Approach (BNA) clearly;

16. Disaggregated poverty incidence by slum and non-slum areas and by sex and age should be provided;
17. Distribution pattern of calorie intake within the households using adult equivalent scales by age and sex should be computed;
18. Intra-family distribution of food and food consumed outside households should be examined;
19. Interpretation of P_0, P_1 and P_2 measures should be clearly spelled out;
20. Information on household income in addition to per capita income and household size should be provided;
21. The information on educational status and poverty as well as income status and poverty along with their policy implications should be included;
22. Intertemporal comparisons should be included in relation to changes with findings of earlier surveys (e.g. April to April and October to October);
23. Cross classification by decile groups should be included;
24. In order to derive implications poverty gap ratios should be computed in terms of GNP (e.g. national cost of poverty reduction);
25. Definition of literacy should be explicit;
26. Access to sanitation should be broadly classified into kutcha, pit and non-pit.

Session II: Poverty Monitoring in the Rural Areas

GENERAL

1. Conclusions, references and policy implications should be incorporated in the report.

METHODOLOGY

2. The sample size should be appropriately determined to derive the best and unbiased estimates as well as to cover disaggregated data by age, sex and other characteristics.;
3. The development of a composite index/indicator like HDI of UNDP should be attempted;
4. Fuel cost should be included in the cost of the minimum food basket including types of fuel;
5. The GIS interpretation should be presented for appropriate indicators;
6. Homestead land should be included in land ownership disaggregation;
7. Regional disaggregation of the data should be carried out;
8. More details on socioeconomic characteristics of different categories of the poverty groups should be presented;

9. The definition of the landless should be made explicit;
10. Gender dimensions of different poverty indicators should be presented;
11. The source of credit by of different groups should be covered;
12. The implications of adoption of the calorie-expenditure method should be explored;

INDICATORS

13. The following indicators should be considered for inclusion:
    i. Life expectancy;
    ii. Gender dimensions;
    iii. Access to common property resources (CPR);

ANALYSIS

14. The report should contain analysis of changes in poverty scenario based on comparison with previous survey results;
15. The intertemporal trends in poverty indicators (e.g. HCI, PGT) should be presented;
16. The distribution of various indicators by decile groups should be presented;
17. The indictors should be analyzed in terms of size of households under various groups;
18. The implications of the poverty index (include poverty gap ratio), in terms of GNP (national cost of poverty reduction) could be suggested;
19. The specific definitions of literacy employed in the survey could be spelled out and sanitation coverage should distinguish between access to pit and non-pit latrines;
20. The report could provide additional information on specific poverty aspect based on in-depth secondary analysis;
21. The analysis could focus on monitoring of per capita income and its growth to estimate the time required to graduate above the poverty line by specific groups;
22. The report should contain a comparative analysis of urban and rural poverty in terms of major characteristics;
23. Wherever feasible, the information should be disaggregated by sex;
24. Inequality in income and other relevant indicators should be focused along with decomposition of inequality into consistent components.

Session III: Analytical Report on Poverty Monitoring Survey in Rural Areas in Bangladesh, October 1994 and April 1995

GENERAL

1. In order to draw major conclusions, longer run analysis should be undertaken;

2. Issues of seasonality should be addressed adequately in drawing conclusions regarding changes in poverty status of different groups;
3. Steps should be taken to improve the quality of overall survey data collection methodology, and food intake and expenditure data;
4. The adoption of the present practice of uniform minimum intake calorie of 2122 k.cal. for all age groups and sex should be reviewed.

METHODOLOGY

5. In addition to the FEI method, other methods of computing the poverty line should be explored;

INDICATORS

6. Basic indicators on quality of life should be included.

ANALYSIS

7. For deriving confidence intervals and standard errors of the estimates, appropriate formula should be used and rationale for using such formula should be given;
8. The assumptions made for specifying poverty density functions and functional forms should be made explicit;
9. Alternative estimates of poverty should be made keeping in view their relevance and applicability in Bangladesh;
10. For landownership classes, the initial level from which poverty would be reduced should be mentioned and parameterized Lorenz curve could be replaced by use of ungrouped data and direct estimates;
11. The report should include discussions on quality of the survey data;
12. More analysis and explanations should be incorporated to make the report useful as a policy paper;
13. The poverty comparisons should be made in terms of the same period (e.g. October - October), two periods (e.g. May-October) as well as over time;
14. Along with price differences, the income aspects (e.g. wage rate) should be also analysed;
15. The report should include additional indicators relevant for policy analysis;
16. The concept of expenditure saving should be included as a part of income;
17. The relationship between household income and expenditure should be further explored;
18. The role of growth in poverty reduction should be emphasized;
19. The conclusions based only on inequality elasticity or similar measures could be partial and, as such, should be reinvestigated and supported by supplementary information;

20. The policy implications on landownership status with focus on the landless group should be highlighted;
21. The report should explain (i) differences between price increases and the computed value of the poverty line (which is not proportionate with such increases), (ii) the decline in expenditures of the poor over the two surveys, (iii) extent of substitution between food and non-food commodities, and (iv) intrahousehold distribution of consumption expenditure;
22. Sensitivity analysis based on equivalent scales could be carried out and the expenditure - poverty relationship in relation to situations in other countries should be compared;
23. The analysis should employ appropriate rural prices and further explore poverty elasticities with respect to between and within class inequalities.

Regional Workshop on Modeling Structural Adjustment and Income Distribution: CGE Framework CIRDAP, Dhaka. 16-17 May 1999

FOLLOW UP DISCUSSIONS

During the follow-up discussions, several issues relating to general equilibrium framework and MIMAP approach were raised.

Professor John Whalley observed that

In academic work, the trend is to emphasise on issue-driven and small models with numerical simulation emerging as second best option. There also seems to be appearing greater diversity in the use of such models;

In case of application in policy and decision making process, there has been a sharp acceleration in use of such models during recent years. One should also note the `propaganda' use of such models. The demand, however, is for multipurpose models with simple structure utilising the latest data and having the capability to explore in-depth implications.

In terms of MIMAP modeling framework, several concerns should be addressed e.g. applicability of model results in policy making; identification of key parameters in model simulation; appropriate structure of the model to analyse the issues concerned keeping in view the fact that the models are as relevant as their weakest links; logical rigor and realism of the model and its satisfactory calibration.

In terms of identifying needs and the scope of technical assistance, the purpose of the modeling exercise should be well-defined to determine the appropriate analytical forms, data requirements and execution of the research.

The required technical assistance should be clearly defined in terms of both country specific and cross-country requirements, with a clear focus on a concrete agenda of the MIMAP work, with well structured mechanisms to gain access to information/communication flows among the countries and with IDRC (e.g. the relevance of a Steering Committee with well-defined functions could be explored) to generate time-bound activity schedules and concrete suggestions to IDRC.

It was suggested by Dr. Paul Dorosh that there was a need to create a wider base of GE modelers in each country with better training and modeling capability to sustain capacity building; organise training sessions to create a core group to identify the issues and provide feed back/comments; develop a simple model to serve as a training tool; examine model/SAM structure in terms of adequacy to address the stipulated issues; provide more focus to food/agriculture sector in addressing poverty concerns; and to labour market closure options both in rural and urban areas.

Dr. Bernard Decaluwe observed the differential needs across countries in the training area. He suggested that the basic training needs and country-specific requirements could be integrated within a flexible framework along with appropriate role of distant learning mechanism. Training and technical meetings involving national modelers and resounrce persons could be organised within a well-defined and need-specific format e.g. with a duration of one week or more combining national presentations, plenary sessions, expert committee meetings to examine the status of country models, technical sessions with specific country researchers and preparation of specific follow up action plans. It might be useful to circulate the papers, along with annexes containing the GAMS code, at least 2/3 weeks prior to the workshop, he added.

It was suggested that the country modelers should work out appropriate modalities to proceed with the above. For the purpose, a Steering Committee of the MIMAP modelers could be formed to work out the details, adopt a research-driven and learning by doing approach, prepare relevant training programmes and suggest other actions. A process approach should be followed to create effective modeling groups in each country to result in fairly well-articulated country models. For effective functioning of the mechanism, the managerial responsibilities should be given to specific country group (MIMAP team) who would work out the programmes regularly (e.g. training/workshop every six months or as deemed necessary).

In short, the requirements were broadly identified in terms of:

- Training;
- Technical support;

- Access to technical and model-related developments and literature
- Regular interaction mechanisms with relevant experts on specific CGE modeling issues;
- Forum for detailed discussion on all aspects of country CGE models;
- Alternative ways of addressing data/information problems;
- Country level capacity building to sustain effective modeling groups;
- Enhanced interactions with policy makers and user groups to ensure relevance and usage of modeling efforts and create desired impacts.

Follow-up Proposal to IDRC

The workshop provided the MIMAP country modelers with a useful forum to interact and learn from each other and receive guidance for future planning of activities from the resource persons. It was unanimously resolved that mechanisms should be evolved to pursue such interactions in a regular and well coordinated manner. For ensuring the above, it is proposed that a Steering Committee (SC) be formed with representatives of modelers of MIMAP projects in the region. The SC will prepare the detailed modalities and the work plan to pursue the concerns identified in the workshop and provide a regular forum of interaction and collaboration among the researchers. To begin with, it would submit a detailed annual work plan to IDRC for consideration. For effective coordination, it is necessary for a specific MIMAP project to provide management support to the SC. It is proposed that MIMAP-Bangladesh be entrusted with the responsibility.

If the above arrangements are acceptable to IDRC, the SC will be formally established to work out the proposal for submission.

CIRDAP-BBS NATIONAL SEMINAR ON POVERTY MONITORING, CIRDAP, DHAKA. 24 MARCH, 1998

1. Analyse data separately for organized and unorganized villages;
2. Identify the determinants, factors and processes of grassroots level dynamism from the poverty surveys;
3. Adopt adequate sample size for disaggregated analysis, consolidate the methodology and analyse the results for effective use by the policy makers;
4. Integrate rural and urban poverty analysis to suggest implication on rural urban migration, access to credit, infrastructure and other basic services;
5. Ensure conceptual clarity in defining landlessness, household size, female headed households, basic needs and similar other characteristics;
6. Direct statistical analysis at defining composite index of poverty and explore poverty characteristics and determinants through multi variate analysis of panel data.

Expert Group Meeting on Computerised Information System (CIS) of Poverty Monitoring System (PMS) under Monitoring Adjustment and Poverty (MAP)Project, CIRDAP, Dhaka. 18 September 1998

The meeting recommended the following:

- Along with calorie and expenditure, other socioeconmic, demographic and related indicators, as collected under the PMS, should be employed under the CIS to derive a comprehensive picture of poverty in the spatial domain;
- The focus of CIS information should include specific and identifiable target groups of the poor to facilitate policy making;
- The poverty profile under the CIS should emphasize expenditure rather than income in view of more reliability of the former statistics;
- The methodology of arriving at the composite index should be re-examined. The focus should be placed more on the underlying determinants of poverty status of the households;
- The CIS should be geared more towards spatial mapping of poverty levels in terms of multi-dimensional indicators than analysis of determinants of poverty;
- BBS should identify specific indicators for GIS manipulation and suggest these indicators to SPARRSO for inclusion under the CIS;
- The appropriate level of spatial disaggregation under the GIS should be determined and, in view of the present sample size, this may be done at the Division level;
- The possibility of showing more than one poverty indicators in a single map for a particular geographical location should be explored to reveal the multi-dimensional status of poverty.

CIRDAP-BBS National Seminar on Poverty Monitoring, CIRDAP, Dhaka. 6 April 1999

METHODOLOGY AND COLLECTION OF DATA

- The use of adult equivalent scale should be explored.
- Disaggregation of poverty statistics over locations in both urban/rural areas should be attempted.
- In urban areas, ownership of houses should be included in assets.
- In assets/resources, ownership of productive assets e.g. equipment, machinery, sewing machine, boats etc. should be included.
- Access to electricity should be included.
- It would be useful to generate data on price series (including wage rates) from the survey.
- Within education, access to skills should be categorized. Similarly, access to safe water (e.g. free from arsenic) should be included.

- In crisis coping, sources of credit should be made explicit.
- Some indicators on empowerment should be included.
- The classification of urban land ownership should be reviewed.
- The definition of crisis and crisis coping should be reviewed.
- Along with FEI method, poverty estimates based on CBN method should be given.
- Data on average years of schooling should be included along with educational status.
- Analysis on disadvantages faced by female headed households should be included e.g. based on whether the major earner is male or female.

TABULATION AND PRESENTATION OF DATA

- Standard errors/confidence intervals of poverty indicators should be presented.
- Alternative measure of poverty e.g. from direct calorie consumption curve could be provided.
- For inter-temporal comparisons, the relevant statistics should be deflated using appropriate deflators.
- The average household size of poor and well-off should be provided.
- The equivalence of Madrasa education should be mentioned.
- The average land ownership of poor and non-poor should be calculated. This could be done for other major assets.
- Along with calorie, calculation of other nutrients (e.g. proteins, vitamins etc.) should be undertaken.
- Tables should be included comparing male/female headed households along with their numbers.
- A comparison of poverty status of decile and expenditure groups (both intra and inter-comparisons among the groups) could be provided.
- Average household/ per capita income of each decile group should be mentioned.
- In the urban report, some tables could be given for slum and non-slum areas.
- A summary table containing results of all socio-economic indicators along with rural-urban comparisons and national aggregate could be provided.

ANALYSIS AND INTERPRETATION OF DATA

- Along with detailed indicators, a comprehensive analysis on changes in poverty situation should be included.
- A synthesis of the overall poverty situation at the national level in the country should also be included.

- The results could be integrated with surveys on health, education, nutrition and other aspects conducted by BBS.
- The construction of a human deprivation index should be explored.

CIRDAP-BBS Regional Seminar on Poverty Monitoring, CIRDAP, Dhaka. 21 May 2000

Based on the discussions, recommendations were made to sharpen, and expand the future scope of the Poverty Monitoring System (PMS) to address the following issues:

i) In the estimation of poverty, along with the head-count ratio, poverty gap ratio and gini co-efficient, other measures of poverty such as Sen Index for national, regional, rural and urban areas; and poor and non-poor should be computed and compared with. The poverty analysis should be graduated from the head count ratio to generation of poverty profiles by employing cost of basic needs;

ii) Attempts should be made to work out the poverty trends with respect to growth of GDP and trends of annual expenditure on social safety nets;

iii) In order to provide appropriate measures of poverty, a national poverty line should be established. The data generated through the PMS surveys since 1994 should be the basis for establishing such poverty line;

iv) A national poverty line along with the regional poverty lines should be provided along with the time series data of all the surveys conducted under the poverty monitoring surveys over the years in real terms and the changes thereby;

v) Summary poverty profile should be given by decile, rural/urban, poor and non-poor by selected basic variables;

vi) Information on mortality, morbidity and disease burden should be included in order to derive some standard poverty estimates.

2.5.4 List of Publications under Monitoring Adjustment and Poverty (MAP) – Bangladesh, Phase III

(AS OF MARCH 2001)

STUDY SERIES

- Report of the National Seminar on Monitoring Adjustment and Poverty in Bangladesh, November 1995, (mimeo) CIRDAP.*
- Report of the CIRDAP-BBS National Seminar on Poverty Monitoring, 19 August 1996, *CIRDAP Study Series No. 174*, CIRDAP 1996.
- Report of the CIRDAP-BBS National Seminar on Poverty Monitoring, 30 April 1997, *CIRDAP Study Series No. 175*, CIRDAP 1997.
- Report of the CIRDAP-BBS National Seminar on Poverty Monitoring, 24 March 1998, *CIRDAP Study Series No. 180*, CIRDAP 1998 *
- Report of the CIRDAP-BBS National Seminar on Poverty Monitoring, 6 April 1999, *CIRDAP Study Series No. 188*, CIRDAP 1999
- Report of the Regional Workshop on Modeling Structural Adjustment and Income Distribution: CGE framework, 16-17 May 1999, *CIRDAP Study Series 190*, CIRDAP 1999
- Report of the CIRDAP – BBS Regional Seminar on Poverty Monitoring, 21 May 2000, *CIRDAP Study Series No. 192*, CIRDAP 2000.

FOCUS STUDY SERIES

- Structural Adjustment Policies and Labour Market in Bangladesh, by M. Ismail Hossain and others. *MAP Focus Study Series No. 5*, July 1998, pages 241 [ISBN 984-8104-24-1] CIRDAP.

  Price: US$25 for CMCs, and US$50 for others.

- Agricultural Growth and Stagnation in Bangladesh, by Quazi Shahabuddin and Rushidan I. Rahman. *MAP Focus Study Series No. 6*, July 1998, pages 221 [ISBN 984-8104-25-1] CIRDAP.

  Price: US$25 for CMCs, and US$50 for others.

- Agricultural Production Cycle and Rural Poverty in Bangladesh, by M.A. Hamid and others. *MAP Focus Study Series No. 7,* August 1998, pages 128 [ISBN 984-8104-26-1] CIRDAP.

  Price: US$25 for CMCs, and US$50 for others.

- Public Expenditure and Social Development in Bangladesh, by Omar Haider Chowdhury and Binayak Sen. *MAP Focus Study Series No. 8*, October 1998, pages 98 [ISBN 984-8104-28-1] CIRDAP.

  Price: US$10 for CMCs, and US$25 for others.

- Interlinkages of Agricultural Diversification in Bangladesh, MAP Focus Study Series No. 9, CIRDAP, 2001
- Rural – Urban Migration and Poverty: The Case for Reverse Migration in Bangladesh, MAP Focus Study Series No. 10, CIRDAP, 2001.
- Savings and Farm Investment in Bangladesh: An Analysis of Rural Households, MAP Focus Study Series No. 11, CIRDAP, 2000.
- Efficacy of Alternative Poverty Alleviation Programmes in Bangladesh, MAP Focus Study Series No. 12, CIRDAP 2001.
- Economic Reforms, Natural Resources and Environment in Bangladesh, MAP Focus Study Series No. 13, CIRDAP, 2001.

WORKING PAPER SERIES

- Database for the General Equilibrium Model: Input-Output and Related Tables for the Bangladesh Economy: 1992-93, *MAP Working Paper Series No. 2 (Revised)*, CIRDAP, 1996.
- Report on Expert Group Meeting on Computerized Information System of Poverty Monitoring System under Monitoring Adjustment and Poverty Project, *MAP Working Paper Series No. 3*, CIRDAP, 1997.
- Staying Alive: Women and Poverty in Rural Bangladesh, *MAP Working Paper Series No. 4*, CIRDAP, 1997.
- Computerised Information System (CIS): GIS Component (Final Report), *MAP Working Paper Series No. 5*, CIRDAP, 2001.

TECHNICAL PAPER SERIES

- A Social Accounting Matrix for Bangladesh Economy 1992-93: A Basis for Fixed Price and Flex Price Models, *MAP Technical Paper Series No. 1*, CIRDAP, 1997.
- Poverty Profile and Poverty Alleviation Effects in Bangladesh: A SAM Based Analysis, *MAP Technical Paper Series No. 2*, CIRDAP, 1997.
- A Computable General Equilibrium Model for Poverty Monitoring in Bangladesh, *MAP Technical Paper Series No. 3 (Revised)*, CIRDAP, 1998.
- Potential Implications of Gas Sector Boom in Bangladesh: A Computable General Equilibrium Analysis, *MAP Technical Paper Series No. 4*, CIRDAP, 1997. *

- A Computable General Equilibrium Model of the Bangladesh Economy for Monitoring Poverty Consequences of Macroeconomic Policies: User's Manual, *MAP Technical Paper Series No. 5*, CIRDAP, 1998.
- Food Characteristics Demand System: Elasticity Estimates by Occupational Groups in Bangladesh, *MAP Technical Paper Series No. 6*, CIRDAP, 1998.
- Consequences of Selected Macroeconomic Policy Changes on Nutrient Availability of Household Groups, *MAP Technical Paper Series No. 7*, CIRDAP, 1998.
- Computerised Information System for Poverty Monitoring: User's Manual, *MAP Technical Paper Series No. 8*, CIRDAP, 1998.
- Numerical Specifications of the Bangladesh Economy: A Social Accounting Matrix 1993/94, *MAP Technical Paper Series No. 9*, CIRDAP, 1999.
- Manual for SAM Construction, *MAP Technical Paper Series No. 10*, CIRDAP, 2000.
- Description of Model Data, *MAP Technical Paper Series No. 11*, CIRDAP, 2000.
- Flow –of- Fund for Bangladesh Economy, *MAP Technical Paper Series No.12*, CIRDAP, 2000.
- Impact of Tariff Liberalisation, *MAP Technical Paper Series No. 13*, CIRDAP, 2000.

POLICY BRIEFS

- Public Expenditure, *CIRDAP Policy Brief No. 1*, 1995 *
- Markets in Bangladesh, *CIRDAP Policy Brief No. 2*, 1995 *
- Environment, *CIRDAP Policy Brief No. 3*, 1995 *
- Human Resource Development, *CIRDAP Policy Brief No. 4*, 1995 *
- Public Health Care & Family Planning Services, *CIRDAP Policy Brief No. 5*, 1996 *
- Poverty Profile and Sectoral Poverty Alleviation Effects in Bangladesh: A SAM based Analysis, *CIRDAP Policy Brief No. 6*, 1997. *
- Distribution of Benefits of Rural Public Expenditure on Education, *CIRDAP Policy Brief No. 7*, 1997. *
- Distribution Patterns of Public Health Spending in Rural Bangladesh, *CIRDAP Policy Brief No. 8*, 1997.
- Some Aspects of Labour Market in Bangladesh, *CIRDAP Policy Brief No. 9*, 1997. *
- Public Safety Net Programmes and Rural Infrastructure in Bangladesh, *CIRDAP Policy Brief No. 10*, 1997. *
- Structural Adjustment Policies and Labour Market, *CIRDAP Policy Brief No. 11*, 1997. *
- Staying Alive: Women and Poverty in Rural Bangladesh, *CIRDAP Policy Brief No. 12*, 1998.*

- Microcredit Interventions for Poverty Alleviation, *CIRDAP Policy Brief No. 13*, 1999
- Interlinkages of Agricultural Diversification in Bangladesh, *CIRDAP Policy Brief No. 14*, 1999
- Rural – Urban Migration and Poverty: A Case for Reverse Migration in Bangladesh, *CIRDAP Policy Brief No. 15,2000.*

NEWSLETTER

- MAP Newsletter No. 1, 1996
- MAP Newsletter No. 2, 1996
- MAP Newsletter No. 3, 1997
- MAP Newsletter No. 4, 1997*
- MAP Newsletter No. 5, 1998*
- MAP Newsletter No. 6, 1998
- MAP Newsletter No. 7, 1999

BBS PUBLICATIONS

- Report of the Poverty Monitoring Survey 1994, Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 1996. δ
- Report of the Poverty Monitoring Survey (April 1995), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 1996. δ
- Report of the Rural Poverty Monitoring Survey (December 1995), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 1996. δ
- Report of the Urban Poverty Monitoring Survey (December 1995), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 1996. δ
- Report of the Rural Poverty Monitoring Survey (April 1996), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 1998. δ

- Report of the Urban Poverty Monitoring Survey (April 1996), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 1998. δ
- Report of the Rural Poverty Monitoring Survey (April 1997), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 1999 δ
- Report of the Urban Poverty Monitoring Survey (April 1997), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 1999 δ
- Report of the Rural Poverty Monitoring Survey (April 1998), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 1999 δ
- Report of the Urban Poverty Monitoring Survey (April 1998), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 2000 δ
- Report of the Poverty Monitoring Survey (May 1999), Regular and Continuous Monitoring of Poverty Situation in Bangladesh Project, Bangladesh Bureau of Statistics, Statistics Division, Ministry of Planning, Government of the Peoples Republic of Bangladesh, Dhaka, 2000 (Draft) δ

OTHER PUBLICATIONS

- ⊙ The Micro Impact of Macroeconomic and Adjustment Policies (MIMAP) in Pakistan. *CIRDAP Study Series No. 167*, CIRDAP 1996.
- ⊙ Structural Adjustment Policies and Health Care Services: Glimpses from Two Villages in Bangladesh, by Rushidan I. Rahman and Kamar Ali. *CIRDAP Study Series No. 173*, 1996, pages 86 [ISBN 984-8104-18-1] CIRDAP & UNFPA, Dhaka. *
- ⊙ The Micro Impact of Macroeconomic and Adjustment Policies (MIMAP) in Sri Lanka, *CIRDAP Study Series No. 178*, CIRDAP 1997.
- ⊙ Minutes of the MAP Steering Committee Meeting held in 18 December 1995
- ❖ Minutes of the MAP Steering Committee Meeting held in 13 April 1997
- ⊙ Minutes of the MAP Steering Committee Meeting held in 22 July 1998

Homepage

- MAP Homepage access: **http://www.idrc.org.sg/pan/mimap**

The MAP-Bangladesh homepage was hosted by PAN/IDRC.

2.5.5 Papers Presented at MIMAP Meetings

- Paper presented at the Seminar on MIMAP, November 12-13, 1995, Vientiane, Lao PDR.
- Paper presented at the Planning Workshop on MIMAP, November 14-15, 1995, Islamabad, Pakistan.
- Papers Presented at the Workshop on MIMAP, July 1-5, 1996, Manila, Phillippines.
- Papers presented at the Second Annual Meeting of MIMAP, May 5-7, 1997, Ottawa, Canada.
- Paper presented at the Workshop on Gender Discrimination under Structural Reforms, New Delhi, India, 6-7 June 1997.
- Papers presented at the Planning Meeting on MIMAP, 11-12 June, 1997, Colombo, Sri Lanka.
- Papers presented at the MIMAP Annual Meeting in Kathmandu in November 1998.

3. Conclusion

The Research Division of CIRDAP with the assistance of the International Development Research Centre (IDRC), Canada and Canadian International Development Agency (CIDA) initiated the project ***Monitoring Adjustment and Poverty (MAP) in Bangladesh*** in 1990 to address some specific issues e.g. monitor poverty using multidimensional indicators; analyse micro impact of macroeconomic and structural adjustment policies; and provide feedback to policy makers to design effective macro policies. These issues were required to formulate and implement sustainable anti-poverty strategy in Bangladesh. The MAP project provided the policy makers in Bangladesh with institutional arrangements and technical capability to monitor poverty and impact of macroeconomic and adjustment policies at the micro level. Phase I of the project pilot tested a set of multidimensional indicators of poverty and suggested a methodology for regular monitoring of poverty and the impact of macro policies by national institutions in Bangladesh. Phase II of the project initiated in 1993, carried the work further to identify specific issues and pursue activities in achieving the MAP objectives. The Phase III of the project initiated in 1995 to strengthen the capability of the Bangladesh Bureau of Statistics (BBS) to establish and undertake, on a regular basis, monitoring of poverty and impact of macro policies on poverty at the household level and provided feedback to policy makers.

The major components of the MAP included: i) Poverty Monitoring Surveys, ii) Analytical System through Computable General Equilibrium Modelling, iii) Focus Studies, and iv) Dissemination of Information. Under the project BBS conducted 14 round Poverty Monitoring Surveys—8 in rural areas and 6 in urban areas. The latest survey conducted in April-May 1999 covered a larger rural and urban samples capable of generating efficient poverty indicators by 23 regions of the country. The new sample included around 10,000 households in the rural areas and 6,000 households in the urban areas. This study report revealed that population below the poverty line came down to 44.7% by May 1999. This survey findings is going to be the basis of longitudinal studies on the same line to be conducted by BBS in future. An International seminar on the findings of this study was organised by the middle of May 2000. The BBS staff has been trained not only in conducting poverty surveys but also in broader issues of poverty measurement and analysis to help improve data collection.

Poverty monitoring seminars and the ongoing collaboration under the project had provided useful forum for promoting a dialogue among the policy makers, researchers, development partners and others on suggesting ways to mainstream poverty analysis in policy making and designing programmes/ projects. The survey results were widely used, both by the government and the development partners, for assessing the poverty status in the country. The project implementation in Bangladesh also enhanced the capacity building of the Planning Commission personnel in data manipulation for policy planning.

The Computerised Information System (CIS) was a built-in component under poverty monitoring system to develop and institutionalise a computerised system of information collection, storage and retrieval on poverty profile through access to quality data. The data/information gathered through the PMS surveys have been processed on an experimental basis by SPARRSO and presented in an Expert Group Meeting in September 1997 at CIRDAP HQs. A hands-on training was conducted in March 1998 for the PMS staff of BBS and MAP staff to take full advantage of the proposed CIS structure and relate it to GIS and other software. Besides, two researchers were sent abroad for advanced training on poverty data analysis and presentation under the project organised by IDRC and University of Laval, Quebec, Canada. Under the Modelling component, a few test simulations have been carried out after successful calibration and the results have been published and circulated. Besides, a series of training programmes were arranged in phases during 1998-1999 on Social Accounting Matrix (SAM), General Algebraic Mathematical System (GAMS) Programming and Computerised General Equilibrium (CGE) model for the Planning Commission officials and MAP staff.

Focus studies for in-depth analysis of poverty-related issues to supplement the modelling and poverty monitoring efforts were undertaken by renowned economists from Bangladesh. The studies covered areas of policy relevance in the country. In all, 10 such studies were conducted which are valuable documents for policy planning in Bangladesh. Policy briefs on all these studies were prepared and circulated to Bangladesh policy planners and other concerned agencies.

Material/equipment was also provided to implementing institutions. BBS was supplied with 4 vehicles costing US$$100,000; Planning Commission received two computers, printers, photocopiers and other necessary accessories.

The project output are quoted in various policy documents of the GOB, e.g. the Fifth Five Year Plan, Budget (Finance Ministers' speech) and other policy documents. Under the project, 8 printed books, 10 mimeographs, 4 working paper series, 13 technical series, 15 policy briefs/research notes, 7 newsletters have been brought out.

4. Transport/Equipment/Accessories Procured under MAP Phase-III (RF.58) Project

Sl. No.	Description	Quantity
1	Transport: Pajero 4 wheel drive Jeep	04 No.
2	Computer (Philips:E542)	02 Nos.
3	Printer (LQ2170)	03 No.
4	UPS (Sendon:1000VA)	16 Nos.
5	3M Desk Top Overhead Projector (USA:3M9100)	01 No.
6	3M Transparency Maker (USA:4550)	01 No.
7	Projection Screen (DA LITE Tripod Projection Screen:60”x60”)	01 No.
8	GBC Spiral Binding (450KM)	01 No.
9	Diskette storage box	01 Unit
10	Maxell floppy diskette	10 Boxes
11	Diskette cleaning drive	01 No.
12	Colour Printer (BJC4200)	02 Unit
13	Plain paper copier (Sharp, SF-2030)	01 Unit
14	EPSON LQ-300 Printer	03 Nos.
15	HP 6L Laser printer	02 No.
16	Power Strip	15 Nos.
17	HP Copy Jet Printer (C3819A)	01 No.
18	3 Pin Power Converter	01 No.
19	Note Book Computer (Toshiba: T2130CS)	01 No.
20	Computer 486 DX-4	02 Nos.
21	Floppy 2HD 3M (3.5”)	05 Pkts.
22	Floppy 2DD 3M (3.5”)	01 No.

Annex-1

Title : Monitoring Adjustment and Poverty (MAP) in Bangladesh Phase-III

Centre File No.94-8304

FINANCIAL STATEMENT

for the period from May 1995 to March 2001

(Figures are in US$)

Sl.#	*Head of A/C*	*Revised Budget*	*Actual Expenses Upto Sept.'00*	*Actual Expense from' Oct'00 to Mar-01*	*Total Expenses Upto Mar-01*	*Balance Against Revised Budget*
		1	2	3	4=(2+3)	5
1	Salaries	276,567.00	260,046.18	18,465.98	278,512.16	(1,945.16)
2	Consultant	108,073.00	105,238.46	1,000.00	106,238.46	1,834.54
3	Training	32,200.00	27,973.72	-	27,973.72	4,226.28
4	Travel	28,916.00	28,916.00	-	28,916.00	-
5	Conference	8,445.00	7,870.01	-	7,870.01	574.99
6	Dissemination	33,912.00	33,923.18	-	33,923.18	(11.18)
7	Research Exps.	177,382.00	121,203.81	23,517.16	144,720.97	32,661.03
8	Equipment	130,567.00	129,643.07	1,651.37	131,294.44	(727.44)
9	Support Service	55,000.00	55,000.00	-	55,000.00	-
	Total :	**851,062.00**	**769,814.43**	**44,634.51**	**814,448.94**	**36,613.06**

Total budget of the project = US$ 851,062.00 equivt. to CAD 1,183,060
Less : Total amount so far
received from IDRC= US$ 839,461.54 equivt. to CAD 1,163,931

Balance	CAD	19,129

Fund balance against receipt :

	US$
Received from IDRC CAD 1,163,931 equivt.	839,461.54
Spent upto March 2001	814,448.94
Fund balance	**25,012.60**

Certified by :

Project Leader of CIRDAP

Dr. Muhammad Solaiman
Director (Research)

Date :29.3.2001

Senior Financial Officer of CIRDAP

Hanif Mahammed
Finance
Officer

Date :29.3.2001

Annex-2

GIS Training Course under MAP Project

15-25 March 1998

Organized by SPARRSO

List of Participants

1. Mr. Faizuddin Ahmed
   Project Director
   Regular and Continuous Monitoring of Poverty Situation
   Bangladesh Bureau of Statistics
   5/12 Humayun Road,Mohammedpur
   Dhaka-1207
2. Mr. Md. Shamsul Alam
   Deputy Project Director
   Regular and Continuous Monitoring of Poverty Situation
   Bangladesh Bureau of Statistics
3. Mr. Janardhan Baral
   Deputy Director
   Regular and Continuous Monitoring of Poverty Situation
   Bangladesh Bureau of Statistics
4. Mr. Md. Hefzur Rahman
   Statistical Officer
   Regular and Continuous Monitoring of Poverty Situation
   Bangladesh Bureau of Statistics
5. Md. Osman Ghani
   Statistical Officer
   Regular and Continuous Monitoring of Poverty Situation
   Bangladesh Bureau of Statistics
6. Syeda Sultana Razia Begum
   Programmer
   Regular and Continuous Monitoring of Poverty Situation
   Bangladesh Bureau of Statistics
7. Mr. Md. Shafiul Alam
   Assistant Programmer
   Regular and Continuous Monitoring of Poverty Situation
   Bangladesh Bureau of Statistics
   5/12 Humayun Road,Mohammedpur
   Dhaka-1207
8. Mr. Md. Abdul Latif
   Assistant Statistical Officer
   Regular and Continuous Monitoring of Poverty Situation
   Bangladesh Bureau of Statistics
9. Mr. Bijoy Biswas
   Asst. Statistical Officer
   Regular and Continuous Monitoring of Poverty Situation
   Bangladesh Bureau of Statistics
10. Md. Azizur Rahman
    Computer Operator
    Regular and Continuous Monitoring of Poverty Situation
    Bangladesh Bureau of Statistics
11. Md. Shafiqur Rahman
    Programme Associate
    Centre on Integrated Rural Development for Asia and the Pacific
    17 Topkhana Rd. ,
    GPO Box 2883, Dhaka 1000

Annex ***II***

Training Phase I

Training on SAM and CGE Modelling

4-22 March 1998

Planning Commission

Participants

1. Sarder Ilias Hossain
   Asst. Chief
   GED, Plan. Commission

2. Ms. Sabira Yesmin
   Asst. Chief
   GED, Plan. Commission

3. Shafiqur Rahman
   Programme Associate, CIRDAP

4. Moksud B. Siddiqui
   Research Associate, CIRDAP

5. Zeenat Ahmed
   Research Associate, CIRDAP

Training Phase II

Training on GAMS and CGE Modelling

26 April – 3 May 1998 (Total 6 days)

CIRDAP and Planning Commission

Participants

1. Mr. Meer Abul Basher
   Joint Chief
   GED, Planning Commission

2. Mr. Md. Golam Sarwar
   Deputy Chief
   GED, Planning Commission

3. Mr. Naquib–bin-Mahbub
   Asst. Chief
   GED, Planning Commission

4. Mr. Md. Nuruddin
   Asst. Chief
   GED, Planning Commission

5. Mr. A.S.M. Abdur Rahim
   Asst. Chief
   GED, Planning Commission

6. Mr. Md. Abdul Momin
   Research Officer
   GED, Planning Commission

7. Mr. Md. Faizul Islam
   Research Officer
   GED, Planning Commission

8. Mr. Md. Shafiqur Rahman
   Programme Associate, CIRDAP

9. Mr. Moksud B. Siddiqui
   Research Associate, CIRDAP

10. Ms. Zeenat Ahmed
    Research Associate, CIRDAP

Training Phase III

Training on GAMS and CGE Modelling

6 – 15 October 1998

CIRDAP and Planning Commission

Participants

1. Mr. Meer Abul Basher
   Joint Chief
   GED, Planning Commission

2. Mr. Md. Nuruddin
   Deputy Chief
   GED, Planning Commission
3. Mr. Md. Golam Sarwar
   Deputy Chief
   GED, Planning Commission

4. Mr. AKM Khorshed Alam
   Sr. Asstt. Chief, GED, Planning Commission
5. Mr. Naquib–bin-Mahbub
   Asst. Chief
   GED, Planning Commission

6. Mr. A.S.M. Abdur Rahim
   Asst. Chief
   GED, Planning Commission

7. Mr. Md. Faizul Islam
   Asstt. Chief
   GED, Planning Commission

8. Mr. Md. Shafiqur Rahman
   Programme Associate, CIRDAP

9. Mr. Moksud B. Siddiqui
   Research Associate, CIRDAP

10. Ms. Zeenat Ahmed
    Research Associate, CIRDAP